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Foreword

1 GENERAL

Airworthiness Notices are issued by the Civil Aviation Authority to circulate information to all concerned with the airworthiness of civil aircraft.

2 ICAO COMPLIANCE STATEMENT TO CAP 455 AIRWORTHINESS NOTICES

2.1 It is the policy of the Civil Aviation Authority to exercise its various discretionary powers by reference to certain documents with a view to ensuring effective implementation of International Civil Aviation Organisation (ICAO) standards. In order to ensure that all these ICAO standards are reflected in UK aviation legislation, this ICAO compliance statement to Civil Aviation Publication (CAP) 455 is issued.

2.2 This document CAP 455 is published in support of the powers of the Civil Aviation Authority contained in Article 9(3) of the Air Navigation Order 2000 as amended. The document includes international standards contained in Annexes to the Chicago Convention.

2.3 It is the policy of the Civil Aviation Authority to have reference to this document when exercising the discretionary powers referred to above and in particular it will normally exercise those powers so as to ensure effective implementation of any such international standards.

3 CONTENTS LIST AND CANCELLATIONS

3.1 The contents list is re-issued with each batch of Notices and gives particulars of all current Notices.

3.2 Cancellation of a Notice will be indicated in the contents list by the deletion of all details except for the number. The word Cancelled and the customary marginal line will be added. At the next issue of the contents list the number of the cancelled Notice will be removed.

4 ARRANGEMENT

4.1 Each Notice is identified by a number, followed by an issue number and an issue date. The Notice No. and Issue No. are listed in sequence in the contents list.

4.2 When a procedure, which has already been the subject of a Notice, is changed, the particular Notice is re-issued under the same number, but bearing a new issue number and issue date.

4.3 Material differences between issues are marked by marginal lines.

5 PUBLICATION AND DISTRIBUTION

5.1 Airworthiness Notices are published on the CAA web site at www.srg.caa.co.uk under the heading “Publications”.

5.2 Each Licensed Aircraft Engineer, each Organisation Approved under the Air Navigation Order and each Owner of Civil Aircraft on the British Register, except for Owners participating in the permit to fly schemes of the Popular Flying Association and the British Microlight Aircraft Association, may obtain paper copy of Airworthiness Notices free of charge by submitting a written request to Requirements and Policy Unit, 1E Aviation
Thereafter, one paper copy each of all new and revised Notices will be issued during the period of validity of the certificate of airworthiness, licence or approval, as appropriate.

5.3 Details of all Airworthiness Publications published by the CAA and the address to which applications should be made, are contained in Airworthiness Notice No. 6.

6 ENQUIRIES

Enquiries about the technical content of Airworthiness Notices should be addressed to the Requirements and Policy Unit, Civil Aviation Authority, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex RH6 0YR.

7 CANCELLATION

This Notice cancels Airworthiness Notice No. 1, Issue 14, dated 16 March 2001, which should be destroyed.
Licensed Aircraft Maintenance Personnel – Certification Responsibilities Of Type Rated/Authorised Personnel In Relation To Articles 10 And 12 Of The Air Navigation Order And Joint Aviation Requirement JAR 145.50

1. General

The purpose of this Notice is to describe the certification responsibilities of UK Licensed Aircraft Maintenance Personnel. Such personnel may be the holder of an Aircraft Maintenance Engineer’s Licence issued under BCAR Section L or an Aircraft Maintenance Licence issued under JAR-66. The responsibilities apply when issuing certifications either as a Type Rated Licence holder or an engineer holding a certification authorisation. It also describes the privileges of the various Type Rated Licences.

It should be noted that where the holder of a licence is performing maintenance activities on aircraft on which he or she is not appropriately licensed, i.e. acting as a non-certifying engineer, they are still expected to act responsibly and carry out such work in accordance with the procedures and standards identified in the following paragraphs.

A licence issued by the United Kingdom CAA does not confer any certification privileges with respect to aircraft which are not registered in the United Kingdom unless the licence holder is entitled to certify for such activities by way of having the licence validated by the relevant Airworthiness Authority and/or is authorised by a maintenance organisation approved by that Authority.

NOTE: (1) A BCAR Section L Licence Without Type Rating or a JAR-66 Aircraft Maintenance Licence does not confer any certification privileges on the holder in their own right. Such licences must be used in conjunction with a certification authorisation. See paragraph 1.10.

NOTE: (2) In the context of this Notice, reference to an authorisation means an authorisation issued by a CAA Approved Maintenance Organisation (under the requirements of BCARs or JAR-145) to allow the holder to issue certifications within the limitations shown on the authorisation.

1.1 The Certificate referred to under Article 10 of the Air Navigation Order is a Certificate of Maintenance Review to be issued following completion of the review required by the Order. The Certificate referred to under Article 12 of the Air Navigation Order is a Certificate of Release to Service to be issued on completion of maintenance of aircraft or components not required to be maintained under JAR-145 (see also Airworthiness Notice No. 14). The Certificate referred to in JAR 145.50 is a Certificate of Release to Service to be issued on completion of maintenance of aircraft or components which are required to be maintained under the provisions of JAR-145.

1.2 In connection with the issue of Certificates of Release to Service, the following definitions apply:

(a) Maintenance means any one or combination of overhaul, repair, inspection, replacement, modification or defect rectification of an aircraft/aircraft component.

(b) Overhaul means the restoration of an aircraft/aircraft component by inspection and replacement in conformity with an approved standard to extend the operational life.

(c) Repair means the restoration of an aircraft/aircraft component to a serviceable condition in conformity with an approved standard.

(d) Inspection means the examination of an aircraft/aircraft component to establish conformity with an approved specification.
(e) **Replacement** is any work operation which involves the removal and replacement of the same part or the substitution of an approved alternative part.

(f) **Modification** means the alteration of an aircraft/aircraft component in conformity with an approved standard.

**NOTE:** (1) Defect rectification normally consists of an element of inspection and troubleshooting followed by repair and replacement of the defective item.

**NOTE:** (2) Inspection includes:

(i) Mandatory Inspection, an inspection classified as Mandatory by the CAA, where the inspection itself is the work (See Airworthiness Notice No. 36).

(ii) Scheduled Maintenance Inspection, an inspection or maintenance including tests required by the Approved Maintenance Schedule.

1.3 Although many terms in common usage describe the various aspects of aircraft engineering, the meanings assigned to such terms are not always the same. For the purpose of this Notice, in relation to airworthiness, the following definitions apply:

(a) **Condition** – the physical state of an item.

(b) **Assembly** – that items are fitted, assembled, attached, installed, connected, secured or adjusted in the approved manner.

(c) **Functioning** – operation in the approved manner achieving such performance, range of movement and freedom of movement as may be specified.

The certifying engineer shall be responsible for the condition, assembly and functioning of the aircraft or its components for maintenance that has been certified under the privileges of a Type Rated Licence or an authorisation.

1.4 The certifying engineer shall be responsible for ensuring that work is performed and recorded in a satisfactory manner taking into account the following:

(a) Whenever work is carried out on an aircraft, it is the duty of all persons to whom this Notice applies to ensure that the work, for which they are responsible, progresses in a managed and controlled manner. Where they are supported by additional staff to carry out the work, consideration shall be given by them before starting the work to the manpower resource available and the abilities of the staff concerned. This is to ensure that the certifying engineer determines and exercises an adequate degree of supervision over such staff.

**NOTE:** Within a CAA Approved Maintenance Organisation it is the responsibility of the Organisation to ensure the provision and management of the overall manpower resource is adequate.

(b) In relation to work carried out on an aircraft, it is the duty of all persons to whom this Notice applies to ensure that an adequate record of the work carried out is maintained. This is particularly important where such work carries on beyond a working period or shift, or is handed over from one person to another. The work accomplished, particularly if only disassembly or disturbance of components or aircraft systems, should be recorded as the work progresses or prior to undertaking a disassociated task. In any event, records should be completed no later than the end of the work period or shift of the individual undertaking the work. Such records should include open entries to reflect the remaining actions necessary to restore the aircraft to a serviceable condition prior to release. In the case of complex tasks which are undertaken frequently, consideration should be given to the use of pre-planned stage sheets to assist in the control, management and recording of these tasks. Where such sheets are used, care must be taken to ensure that they accurately reflect the current requirements and recommendations of the manufacturer and that all key stages, inspections, or replacements are recorded.

**NOTE:** Within a CAA Approved Maintenance Organisation it is the responsibility of the Organisation to control the preparation of such pre-planned worksheets and to put in place a managed document control system.

(c) It is also the duty of all persons to whom this Notice applies to consider the effect such work may have, directly or indirectly, on items which are the responsibility of
other such persons. In all cases where an overlap of responsibility between licence categories occurs, the person primarily responsible for the item must involve all other trade disciplines affected. Every person to whom this Notice applies must therefore be conversant with all other relevant paragraphs of this Notice. Certificates of Release to Service for each relevant trade category must be issued by all persons concerned, each assuming responsibility of and certifying those aspects of the work for which the licence/authorisation holder is entitled to assume responsibility.

1.5 A Certificate of Release to Service shall only be issued on completion of maintenance when the signatory is (signatories are) satisfied that the work has been properly carried out and accurately recorded, having due regard to the use of:

(a) up-to-date instructions 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.

(c) a working environment appropriate to the work being carried out.

When issuing a Certificate of Release to Service for work performed by others, the certifying engineer assumes responsibility. The certifying engineer must have inspected a sufficiently representative sample of the work and the associated documentation, and be satisfied with the competence of the persons who have performed the work. For complex tasks this may require progressive inspections to be carried out as the work proceeds.

NOTE: Licensed engineers certifying under the privileges of their licence may not deviate from the manufacturer’s maintenance instruction or approved airworthiness data, nor use alternative parts, components or assemblies unless such deviation is supported by the written agreement of the manufacturer, approved as a modification or agreed by the CAA. The local CAA Regional Office should be consulted in cases of difficulty. Authorised engineers shall comply with all company procedures covering such issues.

1.6

(a) When the work involves the assembly or any disturbance of a vital point defined in BCAR Section A, Chapter A5-3 or control system, the duplicate inspection required must be completed and certified in accordance with BCAR Section A/B Chapter A/B 6-2 before the relevant Certificate of Release to Service is issued.

(b) The holder of a Type Rated Licence in Category ‘A’ and/or ‘C’ may make certification on aircraft (or their engines, as appropriate) below 5700 kg MTWA for Duplicate Inspections of minor adjustments to control systems on other types within the Category in which the licence is type rated.

NOTE: A minor adjustment is considered to be a single point adjustment or reassembly of a control.

1.7 The holder of an appropriately Type Rated BCAR Section L Aircraft Maintenance Engineer’s Licence in Categories ‘A’, ‘B’, ‘C’ or ‘D’, or the holder of an aircraft Type Authorisation equivalent to Section L Categories ‘A’ and/or ‘C’ or JAR-66 Category B1, may issue a Certificate of Release to Service to cover Non Destructive Inspections on aircraft or components, within the privileges of the licence or authorisation held, subject to the work being carried out as follows:

(a) Inspection requiring the use of Field Kit for the Colour Contrast Dye Penetrant technique may be carried out by persons either Type Rated or Type Authorised as above or persons qualified in accordance with AN No. 94.

(b) Non Destructive Inspections requiring any other technique, including Fluorescent Penetrant Dye, shall be carried out and signed for by persons appropriately qualified in accordance with AN No. 94 prior to the issue of the CRS by licensed or authorised engineer.

1.8 Use of either a Type Rated Licence or an authorisation to issue a certification requires that, in addition to the Licence or Authorisation being valid at the time of certification, the holder has been engaged for periods totalling at least 6 months during the 24 months preceding
the date of the certification on work affording experience comparable with that required for the grant of the Licence/Authorisation.

1.9 A Type Rated Licensed Engineer may issue the Certificates identified below in relation to aircraft for which the licence is Type Rated and in accordance with the privileges detailed in the remaining paragraphs to this Notice. An authorised engineer may only issue these certificates as permitted within the limits of the authorisation.

(a) Certificate of Release to Service for aircraft not required to be maintained under JAR-145 – the holder of an appropriately Type Rated Licence may issue Certificates of Release to Service subject to compliance with the requirements of BCAR Section A/B, Chapter A/B6-2 and A/B6-7.

(b) Certificate of Maintenance Review – the holder of an appropriately Type Rated Licence in at least two Categories (other than Category ‘X’ Compasses) may issue a Certificate of Maintenance Review subject to compliance with the requirements of BCAR Section A/B, Chapter A/B6-2 and A/B6-7 and the Maintenance Schedule Approval Document.

(c) Certificates of Fitness for Flight – the holder of an appropriately Type Rated Licence may issue Certificates of Fitness for Flight subject to compliance with the requirements of BCAR Section A/B, Chapter A/B3-8.

NOTE: (1) For aircraft listed in Paragraph 14 of Airworthiness Notice No. 10 certificates shall only be issued by appropriately authorised engineers. (See also Airworthiness Notice No. 14 Supplement No. 2).

NOTE: (2) A JAR-66 Aircraft Maintenance Licence may only be used to issue the above certificates outside of a CAA approved organisation where the licence is endorsed to permit this and such privileges shall be limited to UK registered aircraft not used for commercial air transport.

1.10 Both BCAR Section L licences (Licence Without Type Rating and Type Rated Licences) and JAR-66 licences (Aircraft Maintenance Licence and Type Ratings, if applicable) may be used to allow the grant of an authorisation within a CAA Approved Maintenance Organisation. In addition to the foregoing paragraphs, when working within such Organisations, the licensed engineer should be aware that he/she is part of a comprehensive maintenance system. It is therefore important to realise that company procedures may further define, or require specific actions, as to how certain issues are to be dealt with and these procedures must be adhered to. It is also important to realise that when working within a CAA Approved Maintenance Organisation and certifying under the privileges of an authorisation the licensed engineer is not certifying under the privileges of the licence.

NOTE: UK licence holders may work for and therefore be authorised to certify by JAR-145 Approved Maintenance Organisations which are not CAA approved. In such cases, validation of a UK issued BCAR Section L licence may be required or the holder of a UK JAR-66 licence may be required to satisfy specific company requirements for authorisation. Such requirements may also introduce additional National legislation and working practices which the licence holder should note and comply with. Whilst certifying under such authorisations and in the absence of specific guidance the principles and practices promulgated in this Notice should be adhered to.

2 BCAR SECTION L AIRCRAFT MAINTENANCE ENGINEER’S LICENCE – TYPE RATED IN CATEGORY ‘A’ – AEROPLANES

NOTE: This paragraph must be read in conjunction with paragraph 1 of this Notice and particular attention paid to sub-paragraphs 1.3, 1.4, 1.5 and 1.6 which are concerned with areas of responsibility.

2.1 The holder of a Category ‘A’ licence may issue Certificates of Release to Service in respect of maintenance in relation to aeroplanes (but not including engines) for which the licence is Type Rated.

2.2 In connection with the certification of maintenance the holder of a Type Rated Licence in Category ‘A’ is responsible for all parts of the aeroplane subject to the limitations detailed in sub-paragraphs 2.3 and 2.4 below (excluding those parts which are the responsibility of the holder of a Type Rated Licence in Category ‘C’).
2.3 The holder of a Type Rated Licence in Category ‘A’ may issue Certificates of Release to Service relating to maintenance (excluding overhaul) of parts of the aeroplane for which the holder is responsible, providing that the work has not involved any of the following:
(a) Bolted joints requiring special techniques.
(b) Complete riveted joints in primary structures.
(c) Complete glued joints in primary structures.
(d) Bonded assemblies in primary structures.
(e) Composite material primary structures.
(f) Welded and brazed joints, other than minor weld repairs carried out by an Approved Welder, but excluding replacement of structural members or repairs to flying control components.
(g) Cotton, linen, polyester and glass fibre fabric covering of a complete fuselage or aerofoil.
(h) The disturbing of individual parts of units which are supplied as bench tested units, except for the replacement or adjustment of items normally replaceable or adjustable in service.

2.4 In connection with the maintenance of instrument, electrical, automatic pilot and radio systems installed in aeroplanes (excluding overhaul or such systems as are associated with the engine(s) and auxiliary power unit(s)) the holder of a Type Rated Licence in Category ‘A’ is entitled to issue Certificates of Release to Service for aircraft for which he holds a Type Rating, subject to the limitations detailed in sub-paragraphs 2.4.1, 2.4.2, 2.4.3, 2.4.4 and 2.4.5.

NOTE: Where no limitations are shown, Certificates of Release to Service may be issued for repair, replacement, modification, mandatory inspection or scheduled maintenance inspection. In respect of the certification of scheduled maintenance inspections, reference should also be made to the Maintenance Schedule Approval Document which may require certification specifically by an engineer licensed in the appropriate ‘X’ or ‘R’ Category. However, in the absence of such a requirement, the holder of a Type Rated Licence in Category ‘A’ Aeroplanes assumes the responsibility for establishing compliance with the maintenance schedule requirements on the systems before issuing the Certificate of Release to Service.

2.4.1 In respect of instrument systems in the aeroplane (excluding instrument systems associated with the engine(s) and auxiliary power unit(s)):
(a) If the aeroplane has an instrument system specified in sub-paragraph 8.1 of Airworthiness Notice No. 10, Certificates of Release to Service may be issued.
(b) If the aeroplane has an instrument system specified in sub-paragraphs 8.2 to 8.4 inclusive of Airworthiness Notice No. 10, Certificates of Release to Service may be issued relating to replacements only, provided that functioning checks to prove serviceability do not require the use of test apparatus.
(c) If the aeroplane is specified in paragraph 10 of Airworthiness Notice No. 10, Certificates of Release to Service may not be issued.

2.4.2 In respect of electrical systems in the aeroplane (excluding electrical systems associated with the engine(s) and auxiliary power unit(s)):
(a) If the aeroplane has an electrical system specified in sub-paragraph 9.1 of Airworthiness Notice No. 10, Certificates of Release to Service may be issued.
(b) If the aeroplane has an electrical system specified in sub-paragraphs 9.2 to 9.4 inclusive of Airworthiness Notice No. 10, Certificates of Release to Service may be issued relating to replacements only, provided that functioning checks to prove serviceability do not require the use of test apparatus.
(c) If the aeroplane is specified in paragraph 10 of Airworthiness Notice No. 10, Certificates of Release to Service may not be issued.

2.4.3 In respect of automatic pilot systems in the aeroplane:
(a) If the aeroplane has an automatic pilot system specified in sub-paragraph 13.1 of Airworthiness Notice No. 10 installed, Certificates of Release to Service may be issued.

(b) If the aeroplane has an automatic pilot system specified in sub-paragraph 13.2 of Airworthiness Notice No. 10 installed, Certificates of Release to Service may be issued relating to replacements only, provided that functioning checks to prove serviceability do not require the use of test apparatus.

(c) If the aeroplane has an automatic pilot system as specified in sub-paragraph 13.3 or the aeroplane is specified in paragraph 10 of Airworthiness Notice No. 10, Certificates of Release to Service may not be issued.

2.4.4 Certificates of Release to Service may not be issued in respect of radio systems, except that if the aeroplane has a MTWA not exceeding 2730 kg, certificates may be issued in respect of the replacement of VHF communication equipment only.

2.4.5 Certificates of Release to Service may not be issued in respect of compass compensation and adjustment unless the licence is endorsed to that effect.

3 BCA R SECTION L AIRCRAFT MAINTENANCE ENGINEER’S LICENCE – TYPE RATED IN CATEGORY ‘B’ – AEROPLANES OR ROTORCRAFT

NOTE: This paragraph must be read in conjunction with paragraph 1 of this Notice and particular attention paid to sub-paragraphs 1.3, 1.4, 1.5 and 1.6 which are concerned with areas of responsibility.

3.1 The holder of a Category ‘B’ licence may issue Certificates of Release to Service in respect of overhaul, repair, replacement, modification and mandatory inspection in relation to aeroplanes or rotorcraft (but not including engines) for which the licence is Type Rated, subject to the limitations of sub-paragraphs 3.2 and 3.3.

3.2 Category ‘B’ – Aeroplanes

3.2.1 In connection with the certification of overhaul, repair, replacement, modification and mandatory inspection, the holder of a Type Rated Licence in Category ‘B’ – Aeroplanes is responsible for all parts of the aeroplane (provided that the work does not involve the making of components or parts) excluding those parts which are the responsibility of the holder of a Type Rated Licence in Category ‘C’ or ‘D’ and subject to the same limitations as detailed in sub-paragraph 2.4 for Category ‘A’ and excluding the overhaul of electrical, instrument or automatic pilot systems.

3.2.2 Notwithstanding the above the holder of a Type Rated Licence in Category ‘B’ may also issue Certificates of Release to Service relating to all aspects of overhaul, repair, replacement, modification and mandatory inspection relating to items listed as (a) to (e) below, except for those parts which form part of or are attached to the engine, provided that the work does not involve the making of components or parts.

(a) Engine mounting structures and cowlings
(b) Engine controls
(c) Engine fuel, oil and coolant systems
(d) Engine fire extinguishing systems
(e) Engine fluid de-icing systems

3.3 Category ‘B’ – Rotorcraft

3.3.1 In connection with the certification of overhaul, repair, replacement, modification and mandatory inspection the holder of a Type Rated Licence in Category ‘B’ – Rotorcraft is responsible for all parts of the rotorcraft (provided that the work does not involve the making of components or parts) excluding those parts which are the responsibility of the holder of a Type Rated Licence in Category ‘D’ and subject to the same limitations as detailed in sub-paragraph 6.5 for Category ‘A’ and ‘C’ Rotorcraft excluding the overhaul of electrical, instrument, automatic pilot systems, main and tail rotor blades.
4 BCAR SECTION L AIRCRAFT MAINTENANCE ENGINEER’S LICENCE – TYPE RATED IN CATEGORY ‘C’ – ENGINES

NOTE: This paragraph must be read in conjunction with paragraph 1 of this Notice and particular attention paid to sub-paragraphs 1.3, 1.4, 1.5 and 1.6 which are concerned with areas of responsibility.

4.1 The holder of a Category ‘C’ licence may issue Certificates of Release to Service in respect of maintenance in relation to engines and auxiliary power units for which the licence is Type Rated.

4.2 In connection with the certification of maintenance (excluding overhaul) the holder of a Type Rated Licence in Category ‘C’ is responsible for all parts of the engine(s), the engine installation(s), auxiliary power unit(s), other propulsive device(s) and all associated systems and devices which are concerned with their operation, subject to the limitations detailed in sub-paragraphs 4.3, 4.4, 4.5 and 4.6 (excluding those parts which are the responsibility of the holder of a Type Rated Licence in Category ‘D’).

4.3 The holder of a Type Rated Licence in Category ‘C’ may issue Certificates of Release to Service relating to maintenance (excluding overhaul) of components or parts for which the holder is responsible, providing that the work has not involved:

(a) Dismantling of a piston engine other than to obtain access to the piston/cylinder assemblies or the removal of the engine rear accessory cover to inspect and/or replace oil pump assemblies where such work does not involve the removal and refitment of internal gears.

(b) Dismantling of main casings or main rotating assemblies of a turbine engine, except as detailed in sub-paragraph 4.4.

(c) The removal or dismantling of reduction gears, except that, in the case of the BS (DH) Gipsy Queen 70 engine, reduction gears may be removed for the purpose of carrying out inspections after suspected shock loadings.

(d) Propeller balancing, except for the certification of static balancing where required by the maintenance manual and dynamic balancing on installed propellers using electronic balancing equipment where permitted by the maintenance manual or other approved airworthiness data. The work itself may have been carried out by an LAE who has received suitable training on the balancing equipment to be used and the associated procedures, or by an organisation approved for that purpose and which has issued an Approved Test Certificate for the inspection.

(e) Welded and brazed joints, other than minor weld repairs to exhaust units carried out by an Approved Welder but excluding component replacement.

(f) The disturbing of individual parts of units which are supplied as bench tested units, except for the replacement or adjustment of items normally replaceable or adjustable in service.

4.4 Where the maintenance manual for the particular engine provides instruction for the task, replacement of main casings and/or rotating assemblies comprising the whole or part of a particular rotating system will be permitted provided that removal from the engine is achieved solely by disconnecting the flanges of main casings. In accordance with the above principles, some engines have been assigned the following symbols, ⊗ or ⊘ in Airworthiness Notice No. 10. Dismantling of these engines is permissible, but is limited to:

(a) ⊗ – Removal/replacement of main casings, excluding those whose removal results in concurrent removal of a rotating assembly from the engine. No dismantling of main rotating assemblies is permitted.

(b) ⊘ – Removal/replacement of main casings including those whose removal results in concurrent removal of a rotating assembly from the engine, provided this is accomplished solely by disconnecting at the casing flanges. No dismantling of main rotating assemblies is permitted.
4.5 In connection with the maintenance of instrument, electrical and automatic pilot systems installed in aeroplanes, the holder of a Type Rated Licence in Category ‘C’ is entitled to issue Certificates of Release to Service in respect of such systems associated with engine and auxiliary power unit installations for which the holder has a Type Rating, subject to the limitations detailed in sub-paragraphs 4.5.1, 4.5.2 and 4.5.3.

NOTE: Where no limitations are shown, Certificates of Release to Service may be issued for replacement, modification, repair, mandatory inspection or scheduled maintenance inspection. In respect of the certification of scheduled maintenance inspections reference should also be made to the Maintenance Schedule Approval Document which may require certification specifically by an engineer licensed in the appropriate ‘X’ Category. However, in the absence of such a requirement, the holder of a Type Rated Licence in Category ‘C’ – Engines assumes the responsibility for establishing compliance with the maintenance schedule requirements on the systems before issuing the Certificate of Release to Service.

4.5.1 In respect of instrument systems associated with the engine(s) and auxiliary power unit(s):
(a) If the engine is installed in an aeroplane which has an instrument system specified in sub-paragraph 8.1 of Airworthiness Notice No. 10, Certificates of Release to Service may be issued.
(b) If the engine is installed in an aeroplane which has an instrument system specified in sub-paragraphs 8.2 to 8.4 inclusive of Airworthiness Notice No. 10, Certificates of Release to Service may be issued relating to replacements only, provided that functioning checks to prove serviceability do not require the use of test apparatus.
(c) If the engine is installed in an aeroplane specified in paragraph 10 of Airworthiness Notice No. 10, Certificates of Release to Service may not be issued.

4.5.2 In respect of electrical systems associated with the engine(s) and auxiliary power unit(s):
(a) If the engine is installed in an aeroplane which has an electrical system specified in sub-paragraph 9.1 of Airworthiness Notice No. 10, Certificates of Release to Service may be issued.
(b) If the engine is installed in an aeroplane which has an electrical system specified in sub-paragraphs 9.2 to 9.4 inclusive of Airworthiness Notice No. 10, Certificates of Release to Service may be issued relating to replacements only, provided that functioning checks to prove serviceability do not require the use of test apparatus.
(c) If the engine is installed in an aeroplane specified in paragraph 10 of Airworthiness Notice No. 10, Certificates of Release to Service may not be issued.

4.5.3 In respect of automatic pilot systems associated with the engine(s):
(a) If the aeroplane has an automatic pilot system specified in sub-paragraph 13.1 of Airworthiness Notice No. 10 installed, Certificates of Release to Service may be issued.
(b) If the aeroplane has an automatic pilot system specified in sub-paragraph 13.2 of Airworthiness Notice No. 10 installed, Certificates of Release to Service may be issued relating to replacements only, provided that functioning checks to prove serviceability do not require the use of test apparatus.
(c) If the aeroplane has an automatic pilot system as specified in sub-paragraph 13.3 or is specified in paragraph 10 of Airworthiness Notice No. 10, Certificates of Release to Service may not be issued.

5 BCAR SECTION L AIRCRAFT MAINTENANCE ENGINEER’S LICENCE – TYPE RATED IN CATEGORY ‘D’ – ENGINES

NOTE: This paragraph must be read in conjunction with paragraph 1 of this Notice and particular attention paid to sub-paragraphs 1.3, 1.4, 1.5 and 1.6 which are concerned with areas of responsibility.

5.1 The holder of a Category ‘D’ Licence may issue Certificates of Release to Service relating to engines for which the Licence is Type Rated in respect of overhaul, repairs,
replacements, modification and mandatory inspection, subject to the limitations of sub-
paragraphs 5.2 and 5.3.

5.2 In connection with overhaul, repair, replacement, modification and mandatory inspection,
the holder of a Type Rated Licence in Category ‘D’ is responsible for all parts of the engine
including functioning only insofar as test bed performance is concerned. The certification
of functioning insofar as an installed engine is concerned must be made in conjunction with
a holder of a Type Rated Licence in Category ‘C’.

5.3 The holder of a Category ‘D’ Licence may issue Certificates of Release to Service relating
to all aspects of overhaul, repair, replacement, modification and mandatory inspection of
components and parts of the engine only (excluding overhaul, repair, replacement,
modification and mandatory inspection of ignition apparatus, instrument equipment and
electrical equipment) provided that the work does not involve the making of components
or parts.

6 BCAR SECTION L AIRCRAFT MAINTENANCE ENGINEER’S LICENCE – TYPE RATED
IN CATEGORIES ‘A’ AND ‘C’ – ROTORCRAFT

NOTE: (1) This paragraph must be read in conjunction with paragraph 1 of this Notice and particular
attention paid to sub-paragraphs 1.3, 1.4, 1.5 and 1.6 which are concerned with areas of
responsibility.

NOTE: (2) A Category ‘A’ and ‘C’ Rotorcraft Licence may not be used to certify for piston or jet
turbine engines installed in aeroplanes.

6.1 The holder of a Categories ‘A’ and ‘C’ Rotorcraft Licence may issue Certificates of Release
to Service in respect of maintenance in relation to rotorcraft and its engines for which the
licence is Type Rated.

6.2 In connection with the certification of maintenance the holder of a Type Rated Licence in
Categories ‘A’ and ‘C’ Rotorcraft is responsible for all parts of the rotorcraft subject to the
limitations detailed in sub-paragraphs 6.3, 6.4 and 6.5.

6.3 The holder of a Type Rated Licence in Category ‘A’ and ‘C’ Rotorcraft may issue
Certificates of Release to Service relating to maintenance (excluding overhaul) of parts of
the rotorcraft for which the holder is responsible, providing that the work has not involved
any of the following:

(a) Bolted joints requiring special techniques.

(b) Complete riveted joints in primary structures.

(c) Complete glued joints in primary structures.

(d) Bonded assemblies in primary structures.

(e) Composite material primary structures.

(f) Welded and brazed joints, other than minor weld repairs to aircraft structure or ex-
hast units carried out by an Approved Welder but excluding structural or component
replacement.

(g) Dismantling of a piston engine other than to obtain access to the piston/cylinder as-
semblies or the removal of the engine rear accessory case cover to inspect and/or re-
place oil pump assemblies where such work does not involve the removal and
refitment of internal gears.

(h) Dismantling of main casings or main rotating assemblies of a turbine engine, except
as detailed in sub-paragraph 6.4.

(i) -

(j) Dismantling of gearbox casings, except that separation of casings to obtain access for
the purposes of internal inspections in accordance with the manufacturer’s instruc-
tion is permitted.

(k) The disturbing of individual parts of units which are supplied as bench tested units,
except for the replacement or adjustment of items normally replaceable or adjustable
in service.
6.4 Where the maintenance manual for the particular engine provides instruction for the task, replacement of main casings and/or rotating assemblies comprising the whole or part of a particular rotating system will be permitted provided that removal from the engine is achieved solely by disconnecting the flanges of main casings. In accordance with the above principles, some engines have been assigned the following symbols, \( \Theta \) or \( \Delta \) in Airworthiness Notice No. 10. Dismantling of these engines is permissible, but is limited to:

(a) \( \Theta \) – Removal/replacement of main casings, excluding those whose removal results in concurrent removal of a rotating assembly from the engine. No dismantling of main rotating assemblies is permitted.

(b) \( \Delta \) – Removal/replacement of main casings including those whose removal results in concurrent removal of a rotating assembly from the engine, provided this is accomplished solely by disconnecting at the casing flanges. No dismantling of main rotating assemblies is permitted.

6.5 In connection with the maintenance of instrument, electrical, automatic pilot and radio systems installed in rotorcraft (excluding overhaul) the holder of a Type Rated Licence in Categories ‘A’ and ‘C’ Rotorcraft is entitled to issue Certificates of Release to Service for rotorcraft for which he holds a Type Rating, subject to the limitations detailed in sub-paragraphs 6.5.1, 6.5.2, 6.5.3 and 6.5.4.

**NOTE:** Where no limitations are shown, Certificates of Release to Service may be issued for replacement, modification, repair, mandatory inspection or scheduled maintenance inspection. In respect of the certification of scheduled maintenance inspections, reference should also be made to the Maintenance Schedule Approval Document which may require certification specifically by an engineer licensed in the appropriate ‘X’ or ‘R’ Category. However, in the absence of such a requirement, the holder of a Type Rated Licence in Categories ‘A’ and ‘C’ Rotorcraft assumes the responsibility for establishing compliance with the maintenance schedule requirements on the systems before issuing the Certificate of Release to Service.

6.5.1 In respect of instrument systems in the rotorcraft if the rotorcraft is specified in sub-paragraph 7.4 of Airworthiness Notice No. 10, Certificates of Release to Service may be issued relating to replacements only, provided that functioning checks to prove serviceability do not require the use of test apparatus.

6.5.2 In respect of electrical systems in the rotorcraft, if the rotorcraft is specified in sub-paragraph 7.4 of Airworthiness Notice No. 10, Certificates of Release to Service may be issued relating to replacements only, provided that functioning checks to prove serviceability do not require the use of test apparatus.

6.5.3 In respect of automatic pilot/automatic stabiliser systems in rotorcraft, if the rotorcraft has an automatic pilot/automatic stabiliser system specified in sub-paragraph 13.4 or 13.5 of Airworthiness Notice No. 10 installed, Certificates of Release to Service may be issued relating to replacements only, provided that functioning checks to prove serviceability do not require the use of test apparatus.

6.5.4 Certificates of Release to Service may not be issued in respect of radio systems, except that if the rotorcraft has a MTWA not exceeding 2730 kg, certificates may be issued in respect of the replacement of VHF communication equipment only.

7 BCAR SECTION L AIRCRAFT MAINTENANCE ENGINEER’S LICENCE – TYPE RATED IN CATEGORY ‘X’ – INSTRUMENTS

**NOTE:** This paragraph must be read in conjunction with paragraph 1 of this Notice and particular attention paid to sub-paragraphs 1.3, 1.4, 1.5 and 1.6 which are concerned with areas of responsibility.

7.1 The holder of a Category ‘X’ – Instruments Licence may issue Certificates of Release to Service in respect of maintenance in relation to aircraft instrument systems for which the licence is Type Rated, subject to the limitations detailed in sub-paragraph 7.3.

7.2 In connection with the certification of maintenance, excluding overhaul, the holder of a Type Rated Licence in Category ‘X’ – Instruments is responsible for all parts of instrument systems included in the Type Rating.
7.3 The holder of a Type Rated Licence in Category ‘X’ – Instruments may issue Certificates of Release to Service in respect of maintenance, excluding overhaul, of components and parts for which the holder is responsible provided that units which are supplied as bench tested units may not have their individual parts disturbed, except for the replacement or adjustment of items normally replaceable or adjustable in service.

8 BCAR SECTION L AIRCRAFT MAINTENANCE ENGINEER’S LICENCE – TYPE RATED IN CATEGORY ‘X’ – ELECTRICAL

NOTE: This paragraph must be read in conjunction with paragraph 1 of this Notice and particular attention paid to sub-paragraphs 1.3, 1.4, 1.5 and 1.6 which are concerned with areas of responsibility.

8.1 The holder of a Category ‘X’ – Electrical Licence may issue Certificates of Release to Service in respect of maintenance in relation to aircraft electrical systems for which the licence is Type Rated, subject to the limitations detailed in sub-paragraph 8.3.

8.2 In connection with the certification of maintenance, excluding overhaul, the holder of a Type Rated Licence in Category ‘X’ – Electrical is responsible for all parts of electrical systems included in the Type Rating.

8.3 The holder of a Type Rated Licence in Category ‘X’ – Electrical may issue Certificates of Release to Service in respect of maintenance, excluding overhaul, of components and parts for which the holder is responsible provided that units which are supplied as bench tested units may not have their individual parts disturbed, except for the replacement or adjustment of items normally replaceable or adjustable in service.

9 BCAR SECTION L AIRCRAFT MAINTENANCE ENGINEER’S LICENCE – TYPE RATED IN CATEGORY ‘X’ – AUTOMATIC PILOTS

NOTE: (1) This paragraph must be read in conjunction with paragraph 1 of this Notice and particular attention paid to sub-paragraphs 1.3, 1.4, 1.5 and 1.6 which are concerned with areas of responsibility.
NOTE: (2) For the purpose of certification, automatic stabilisation systems are deemed to be automatic pilots.
NOTE: (3) Automatic pilots include related systems such as yaw and or roll dampers, mach trim systems, and automatic throttles.

9.1 The holder of a Category ‘X’ – Automatic Pilots Licence may issue Certificates of Release to Service in respect of maintenance in relation to aircraft automatic pilot systems for which the licence is Type Rated, subject to the limitations detailed in sub-paragraph 9.3.

9.2 In connection with the certification of maintenance, excluding overhaul, the holder of a Type Rated Licence in Category ‘X’ – Automatic Pilots is responsible for all parts of the automatic pilot systems included in the Type Rating.

9.3 The holder of a Type Rated Licence in Category ‘X’ – Automatic Pilots may issue Certificates of Release to Service in respect of maintenance, excluding overhaul, of components and parts for which the holder is responsible provided that units which are supplied as bench tested units may not have their individual parts disturbed, except for the replacement or adjustment of items normally replaceable or adjustable in service.

10 BCAR SECTION L AIRCRAFT MAINTENANCE ENGINEER’S LICENCE – TYPE RATED IN COMBINED CATEGORIES ‘X’ – INSTRUMENT/AUTOMATIC PILOTS

The Type Rated Licence in Combined Categories ‘X’ – Instrument/Automatic pilots is comprised of two ‘X’ Category ratings and the provisions and limitations contained in both paragraphs 7 and 9 of this Notice apply in relation to the Instrument and Automatic Pilot systems installed in any aircraft for which the Combined Categories ‘X’ Licence is type rated.
11 BCAR SECTION L AIRCRAFT MAINTENANCE ENGINEER’S LICENCE – TYPE RATED IN CATEGORY ‘R’ – RADIO

NOTE: This paragraph must be read in conjunction with paragraph 1 of this Notice and particular attention paid to sub-paragraphs 1.3, 1.4, 1.5 and 1.6 which are concerned with areas of responsibility.

11.1 The holder of a Category ‘R’ – Radio Licence may issue Certificates of Release to Service in respect of maintenance in relation to aircraft radio systems for which the licence is Type Rated, subject to the limitations detailed in sub-paragraph 11.3.

11.2 In connection with the certification of maintenance, excluding overhaul, the holder of a Type Rated Licence in Category ‘R’ – Radio is responsible for all parts of the radio systems included in the Type Rating.

11.3 The holder of a Type Rated Licence in Category ‘R’ – Radio may issue Certificates of Release to Service in respect of maintenance, excluding overhaul, of components and parts for which the holder is responsible provided that units which are supplied as bench tested units may not have their individual parts disturbed, except for the replacement or adjustment of items normally replaceable or adjustable in service.

11.4 The holder of a Type Rated Licence in Category ‘R’ – Radio, endorsed to include the overhaul of radio apparatus, is responsible for and may issue Certificates of Release to Service in respect of the maintenance of components and parts of all radio apparatus undergoing periodic check, repair or overhaul in workshop for which the Licence is Type Rated, provided that the work done does not involve the making of radio components or parts.

11.5 The holder of a Type Rated Licence in Category ‘R’ – Radio endorsed including GPWS may issue Certificates of Release to Service in respect of maintenance, excluding overhaul or scheduled maintenance inspection, of Ground Proximity Warning Systems for aircraft for which the licence is Type Rated in respect of its radio systems, subject to the limitations of sub-paragraph 11.3.

12 COMPASS COMPENSATION AND ADJUSTMENT.

The Paragraph 15 Type rating of Airworthiness Notice No. 10 permits the issue of Certificates of Release to Service by the holder in respect of the compensation and adjustment of direct and remote reading compasses on any aircraft not subject to the requirements of either BCAR Section A, Chapters A8-13 or A8-18.

13 JAR-66 CATEGORY A AIRCRAFT MAINTENANCE LICENCE

13.1 A JAR-66 Category A Aircraft Maintenance Licence (AML) may be issued to a person who has demonstrated a competence to act in the role of a Line Maintenance Certifying Mechanic (LMCM). The licence does not entitle the holder to exercise any certification privileges in respect of aircraft unless and until the holder is issued with a corresponding Certification Authorisation. Such authorisations will be issued by a JAR-145 maintenance organisation appropriately approved by the National Aviation Authority of a JAA Member State (JAA-NAA). This means that the JAR-66 Aircraft Maintenance Licence issued by the UK CAA can readily be used as the basis for a certification authorisation throughout the JAA Member States.

NOTE: (1) It should be noted that a JAR-66 licence may not provide for full equivalence in another JAA Member State to certify for work relating to any National legislation which sits outside of JAR-145. Additional language requirements may also apply.

NOTE: (2) The holder of a Category B1 licence is also qualified as a Category A licence holder in the same sub-category, e.g. Aeroplanes Turbine, and may be issued with Category A certification authorisation.

13.2 These Category A privileges will be limited to the performance and certification of specific simple maintenance tasks, either individually or in combination, as defined in JAR 145.30 (d) (1) and will require a combination of theoretical and practical training to be undertaken on each aircraft type to qualify for the task authorisation. Such authorisation, issued by a
JAA-NAA Approved JAR-145 Maintenance Organisation will specify the limitations of the privileges that may be applicable. Licence holders will therefore be required to act in accordance with the authorisation procedures of the company concerned.

14 JAR-66 CATEGORY B1 AIRCRAFT MAINTENANCE LICENCE

14.1 A JAR-66 Category B1 Aircraft Maintenance Licence (AML) may be issued to a person who has demonstrated a competence to act in the role of a Line Maintenance Certifying Technician (LMCT). The Category B1 licence is primarily intended to be used for the purposes of qualification of line maintenance staff for authorisation. The licence, in its own right, does not entitle the holder to exercise any certifying privileges in respect of aircraft and will be used in conjunction with a JAR-145 certification authorisation.

14.2 Such authorisations will be issued by a JAR-145 maintenance organisation appropriately approved by the National Aviation Authority of a JAA member state (JAA-NAA). This means that the JAR-66 Aircraft Maintenance Licence issued by the UK CAA can readily be used as the basis for a certification authorisation throughout the JAA member states. JAR 145.30 (d) (2) also requires it to be used as a prerequisite for authorisation of staff acting as inspectors or supervisors within base maintenance (Base Maintenance Technicians). Licence holders will therefore act in accordance with the authorisation procedures of the company concerned.

NOTE: It should be noted that a JAR-66 licence may not provide for full equivalence in another JAA Member State to certify for work relating to any National legislation which sits outside of JAR-145. Additional language requirements may also apply.

14.3 Category B1 licences apply to aircraft (aeroplanes and helicopters) with a Maximum Take-Off Mass (MTOM) of 5700 kg and above and are issued in licence sub-categories which are:

B1.1 Aeroplanes Turbine
B1.2 Aeroplanes Piston
B1.3 Helicopters Turbine
B1.4 Helicopters Piston

NOTE: An unrestricted B1 sub-category entitles the holder to be granted Category A certification authorisations in the same sub-category, e.g. Aeroplanes Turbine.

14.4 Category B1 certification authorisations allow the holder to issue Certificates of Release to Service under JAR 145.50 for line maintenance on aircraft which are endorsed as individual types on the licence and the corresponding authorisation. Category B1 licences to the full JAR-66 standard include scope to allow the issue of a certification authorisation covering work on a combination of the following disciplines:

- airframe and their related systems;
- engines and their related systems (including where appropriate Auxiliary Power Units);
- electrical power generation and distribution systems (power distribution in respect of airframe and/or engine systems) including lighting systems;
- avionic line replaceable units (LRU).

In respect of avionic LRUs, the work is limited to cases where the serviceability of the system can be established by a simple self test facility (BITE) or by using simple test equipment and it is expected that, for reference purposes, a list of such components will be prepared for each aircraft type by the JAR-145 approved organisation. (Defect rectification on avionic systems which requires an element of decision making in its application other than a simple go/no go decision cannot be certified).

NOTE: The Category B1 licence holder is not entitled to certify for any overhaul work.

14.5 The certification authorisation can only be issued by a JAR-145 organisation when the licence holder has the appropriate basic sub-category listed and the aircraft type rating endorsed on the JAR-66 Aircraft Maintenance Licence. The type training for a Category B1
type endorsement, conducted under a JAR-147 approval, will represent the appropriate
technologies as specified in JAR-66. The certification authorisation will specify the
privileges for the individual, giving due regard to the company scope of approval and any
associated procedures agreed with the JAA-NAA, and will specify any limitations to the
authorisation accordingly.

NOTE: A JAR-66 licence issued on the basis of protected rights (commonly referred to as
grandfather rights) may contain technical restrictions equivalent to the limitations of any BCAR
Section L licence or company authorisations previously held. These protected rights under JAR-66
are a continuation of certifying privileges under an existing licence or certifying authorisation which
allows current personnel to continue working and certifying without the need to re-qualify from
scratch. Authorisations issued by a JAR-145 organisation may therefore be similarly restricted in
scope. It should be noted that conversion to the full JAR-66 licence standard is optional at present.

14.6 JAR-66 Category B1 licences may also be issued with an endorsement allowing the
certification, under the provisions of Articles 10 and 12 of the Air Navigation Order (national
privileges), for work outside of a CAA approved maintenance organisation on aircraft which
are not operated for commercial air transport. Such privileges are limited to UK registered
aircraft only. Certifications may only be made for those aircraft types which are endorsed
individually or as BCAR Section L Group Type Ratings on the licence. The privileges will
reflect the current limitations for relevant BCAR Section L licence categories highlighted
earlier in the appropriate paragraphs of this Notice unless specified otherwise.

14.7 Where before conversion to a JAR-66 licence a BCAR Section L licence was held, any
privileges relating to that licence under paragraphs 2.4, 4.5, or 6.5 of this Notice remain
valid for those aircraft for which a type rating was held before conversion. The recognition
of these privileges is shown by the inclusion of code 999 against that type rating.

15 JAR-66 CATEGORY B2 AIRCRAFT MAINTENANCE LICENCE

15.1 A JAR-66 Category B2 Aircraft Maintenance Licence (AML) may be issued to a person who
has demonstrated a competence to act in the role of a Line Maintenance Certifying
Technician (LMCT). The Category B2 licence is primarily intended to be used for the
purposes of qualification of avionic line maintenance staff for authorisation. The licence, in
its own right, does not entitle the holder to exercise any certifying privileges in respect of
aircraft and will be used in conjunction with a JAR-145 certification authorisation.

15.2 Such authorisations will be issued by a JAR-145 maintenance organisation appropriately
approved by the National Aviation Authority of a JAA Member State (JAA-NAA). This
means that the JAR-66 Aircraft Maintenance Licence issued by the UK CAA can readily be
used as the basis for a certification authorisation throughout the JAA Member States. JAR
145.30 (d) (2) also requires it to be used as a prerequisite for authorisation of staff acting
as inspectors or supervisors within base maintenance (Base Maintenance Technicians).
Licence holders will therefore act in accordance with the authorisation procedures of the
company concerned.

NOTE: (1) It should be noted that a JAR-66 licence may not provide for full equivalence in another
JAA Member State to certify for work relating to any National legislation which sits outside of JAR-
145. Additional language requirements may also apply.

NOTE: (2) Category B2 licences apply to aircraft with a Maximum Take-Off Mass (MTOM) of 5700 kg
and above.

NOTE: (3) A Category B2 licence cannot be used for the purposes of a Category A certification
authorisation unless the Category A licence is also held.

15.3 Category B2 certification authorisations allow the holder to issue Certificates of Release to
Service under JAR 145.50 for the line maintenance on aircraft which are endorsed as
individual types on the licence and the corresponding authorisation. Category B2 licences
to the full JAR-66 standard include scope to allow the issue of a certification authorisation
covering work on a combination of the following aircraft systems:

- instruments;
- automatic pilots (aeroplanes, helicopters and autoland systems);
• radio communication/navigation;
• radio radar;
• electrical power generation and distribution systems (power distribution in respect of avionic systems) including lighting systems.

Scope is not included for authorisation in respect of work on electrical power distribution systems or electrical/avionic components in mechanical systems. (Licences issued on the basis of protected rights may include such scope where so endorsed.)

NOTE: The Category B2 licence holder is not entitled to certify for any overhaul work.

15.4 The certification authorisation can only be issued by a JAR-145 organisation when the licence holder has the appropriate basic category B2 listed and the aircraft type rating endorsed on the JAR-66 Aircraft Maintenance Licence. The type training for a Category B2 type endorsement, conducted under a JAR-147 approval, will represent the appropriate technologies as specified in JAR-66. The certification authorisation will specify the privileges for the individual, giving due regard to the company scope of approval and any associated procedures agreed with the JAA-NAA, and will specify any limitations to the authorisation accordingly.

NOTE: A JAR-66 licence issued on the basis of protected rights (commonly referred to as grandfather rights) may contain technical restrictions equivalent to the limitations of any BCAR Section L licence or company authorisations previously held. These protected rights under JAR-66 are a continuation of certifying privileges under an existing licence or certifying authorisation which allows current personnel to continue working and certifying without the need to re-qualify from scratch. Authorisations issued by a JAR-145 organisation may therefore be similarly restricted in scope. It should be noted that conversion to the full JAR-66 licence standard is optional at present.

15.5 JAR-66 Category B2 licences may also be issued with an endorsement allowing the certification, under the provisions of Articles 10 and 12 of the Air Navigation Order (national privileges), for work outside of a CAA approved maintenance organisation on aircraft which are not operated for commercial air transport. Such privileges are limited to UK registered aircraft only. Certifications may only be made for those types which are endorsed individually or as BCAR Section L Group Type Ratings on the licence. The limitations will reflect the current limitations for relevant BCAR Section L licence categories highlighted earlier in the appropriate paragraphs to this Notice unless specified otherwise.

16 JAR-66 CATEGORY C AIRCRAFT MAINTENANCE LICENCE

16.1 A JAR-66 Category C Aircraft Maintenance Licence (AML) may be issued to a person who has demonstrated a competence to act in the role of a Base Maintenance Certifying Engineer (BMCE). The Category C licence is primarily intended to be used for the purposes of qualification of mechanical or avionic maintenance staff for the issue of a certification authorisation for base maintenance. The licence, in its own right, does not entitle the holder to exercise any certifying privileges in respect of aircraft and will be used in conjunction with a JAR-145 certification authorisation.

NOTE: (1) It should be noted that a JAR-66 licence may not provide for full equivalence in another JAA Member State to certify for work relating to any National legislation which sits outside of JAR-145. Additional language requirements may also apply.

NOTE: (2) Category C licences at present only apply to aircraft greater than 5700 kg Maximum Take-Off Mass (MTOM).

16.2 Such authorisations will be issued by a JAR-145 maintenance organisation appropriately approved by the National Aviation Authority of a JAA Member State (JAA-NAA). This means that the JAR-66 Aircraft Maintenance Licence issued by the UK CAA can readily be used as the basis for a certification authorisation throughout the JAA Member States. Licence holders will therefore act in accordance with the authorisation procedures of the company concerned.

Category C certification authorisations allow the holder to issue Certificates of Release to Service under JAR 145.50 following the completion of base maintenance on aircraft which are endorsed on the licence and the corresponding authorisation as individual types. Such
persons are in essence certifying for the completion of the process associated with base maintenance and are supported by appropriately qualified and experienced staff, Categories B1 and B2 BMT, who will inspect and supervise the actual work. The scope of coverage therefore reflects the whole aircraft and is not limited to certification of solely mechanical or avionic systems.

16.4 It should be noted that a Category C licence holder cannot be authorised to act as a line maintenance certifying technician, exercising line maintenance certification privileges, nor as a base maintenance technician, in the role of an inspector or supervisor clearing individual tasks, unless the licence is also endorsed with the appropriate Category B1 and/or B2 licence with the relevant type endorsements for that level (ATA 104 level 3).

16.5 The certification authorisation can only be issued by a JAR-145 organisation when the licence holder has the basic Category C listed and the aircraft type rating endorsed on the JAR-66 Aircraft Maintenance Licence. The type training for a Category C type endorsement, conducted under a JAR-147 approval, will represent the appropriate mix of systems knowledge as specified in JAR-66. The certification authorisation will specify the privileges for the individual, giving due regard to the company scope of approval and any associated procedures agreed with the JAA-NAA.

**NOTE:** A person qualified to Category B1 or B2 level with type endorsements will also be eligible for a Category C type authorisation, providing the basic Category C licence is held.

17 **JAR-66 GENERAL**

Holders of JAR-66 AML with type endorsements may be required to undertake appropriate differences type training where the aircraft type to be authorised embodies significant variations in the equipment fitted or the aircraft systems configuration. The responsibility for determining the training to be undertaken will remain with the JAR-145 maintenance organisation.

18 **CANCELLATION** This Notice cancels Airworthiness Notice No. 3 Issue 16, dated 23 October 2000, which should be destroyed.
Propellers Approved For Use On Civil Aircraft Manufactured In The United Kingdom

1 Propellers listed in the attached Appendix are approved for use on civil aircraft manufactured in the United Kingdom with Certificates of Airworthiness issued by the Civil Aviation Authority. For those aircraft types which have a Civil Aviation Authority Type Certificate Data Sheet (TCDS), that TCDS should be consulted for details of approved propellers. 

**NOTE:** Propellers listed in this Notice also include those which have been approved for aircraft certificated in the Special Category only, and it would therefore be wrong to assume that the aircraft listed against a propeller type will automatically qualify for certification in other Categories with that propeller fitted.

2 For convenience, propellers are listed under types of engines, but each propeller is approved only for the specific engine-airframe combination shown.

3 Propellers manufactured after the date of this Notice to the same drawing numbers as those given in the attached list may, in addition, bear certain issue numbers. These issue numbers are used mainly to indicate minor modifications which do not affect safety, but in some cases the intention is to indicate changes in pitch or diameter.

3.1 Where an issue number has been used to indicate a minor modification and the pitch and diameter remain the same as against the drawing number shown in this list, it may be assumed that the propeller is approved.

3.2 Where an issue number has been used to indicate a change in pitch or diameter and either of these differ from the figures given in the attached list, the propeller is not approved unless it actually appears in this list.

4 Before fitting a variable-pitch propeller it is essential to ensure that the basic pitch-range setting conforms with the latest setting approved for the particular engine-airframe combination.

5 The pitch quoted is that measured at the radius defined by the manufacturer. Usually this is at 70% or 71% of radius, although in some cases it is at 75%.

6 If it is desired to use a propeller not included in the list, application for approval should be made in accordance with the procedure prescribed in Chapter A3-2 of British Civil Airworthiness Requirements.

7 For propellers approved for imported aircraft of foreign origin, reference should be made to the appropriate publications issued by the Airworthiness Authority concerned, or the relevant manufacturer. Information may also be obtained from the Civil Aviation Authority, Safety Regulation Group.

8 **CANCELLATION** This Notice cancels Airworthiness Notice No. 4, Issue 15, dated 20 March 2000, which should be destroyed.
### Appendix To Airworthiness Notice No. 4

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**CIRRUS MINOR II & IIA**

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**R. R. CONTINENTAL O-240A**

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**GIPSY SIX 2**

**HERCULES 734 and 735**

**LEONIDES 501, 502, 503 and 504**

**LEONIDES 503/8, 504/8 and 514/8**

**LEONIDES 514/5A**

**LEONIDES 531/8B**

**LYCOMING GO-480-B**

**LYCOMING GO-480 G1A6**

**LYCOMING O-235-C1**

**LYCOMING O-290-3**

1A. 170. LL. 7647  6.33  3.92  Auster 5  
FP420  6.25  4.18  Auster 4 and 5  
HR1231  6.50  3.48  Auster 4 and 5  
Z5594  6.00  3.67  Auster 4 and 5  
Z5600  6.50  3.48  Auster 4 and 5  
Z5602  6.50  3.19  Auster 4 and 5  

M76/AM-2-48  6.16  4.00  Auster D4  
Z5960  6.50  3.06  Auster D4  

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LYCOMING O-290-3
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Tyre Wear Limitations

1 INTRODUCTION

1.1 British Civil Airworthiness Requirements require that for certification of new types of aircraft, the depth of tyre tread below which wet braking friction characteristics are impaired should be specified at the time of certification; it is also required that it should be possible to determine, in operational conditions, when the tread depth is worn below this limit.

1.2 This Notice provides general guidance on the subject of tyre wear limitations for operators of all public transport aeroplanes of more than 5700 kg maximum weight on the UK Register for which a limiting tyre tread depth is not otherwise available.

2 DISCUSSION

2.1 Accidents and incidents, resulting from both loss of braking friction and loss of directional control on wet runways, continue to occur. While the scheduled accelerate-stop and landing distances provide some allowance for deterioration in friction, it has been established that this allowance is not sufficient to maintain the required level of safety if tyres which are more than 80% worn are used in wet runway operations.

2.2 As it is not possible fully to allow for this by increasing the scheduled distances (because of the frequency of incidents caused by loss of directional control, even on the most favourable wheel arrangements), the CAA favours the retention of current scheduled distances, together with a recommended minimum tread depth applicable to all aircraft tyres.

3 RECOMMENDATION

In the absence of evidence of the safety of a lower limit for a particular aircraft/tyre/operation combination, it is recommended that a tyre be withdrawn from service when it is worn to such an extent that its wet runway performance would be seriously impaired. This may be defined as when:

(a) It is worn such that any groove has a depth of less than 2mm of tread for more than one quarter of the tread circumference, or

(b) at any place on the circumference the tread pattern is worn to a depth of less than 2mm across the whole width of the tread in contact with the runway.

NOTE: This is not a rigid definition and equivalence may be provided if, for example, tyre wear is such that whilst one groove is less than 2mm all the others are 3mm or more.
Airworthiness Publications – General Information

1  This Notice gives details of the various airworthiness publications which may in general, be obtained from the CAA. Many of these are now available on the CAA web site at www.caa.co.uk. Paper copy can be purchased from Documedia Solutions Ltd, 37 Windsor Street, Cheltenham, Glos. GL52 2DG (Tel. (01242) 235151, Fax. (01242) 584139). All JAA publications are available from Rapidoc, Willoughby Road, Bracknell, Berkshire RG12 8DW (Tel. (01344) 861666, Fax. (01344) 714440).

2  Enquiries regarding documents forming part of the Certificate of Airworthiness (e.g. Flight Manuals and Performance Schedules for specific types of aircraft), should be addressed to the Civil Aviation Authority, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex RH6 0YR. Enquiries relating to responses to AAIB Safety Recommendations or UK Accident Statistics, or for documents containing information on reportable occurrences, should be addressed to the Safety Investigation and Data Department, at the above Aviation House address. Enquiries regarding the International Register of Civil Aircraft should be addressed to: Civil Aviation Authority, Aircraft Registration Section, CAA House, 45-59 Kingsway, London WC2B 6TE. Telephone: 020 7453 6666, Fax: 020 7453 6670. All other enquiries relating to CAA publications should be addressed to, Documedia Solutions Ltd, at the address in paragraph 1.

3  AIRWORTHINESS REQUIREMENTS

3.1  British Civil Airworthiness Requirements (BCAR) These comprise minimum requirements and constitute the basis for the issue of approvals and certificates required by the Air Navigation Order. Appendix No. 3 to this Notice lists the constituent sections of BCAR together with their amendment status.

3.2  Joint Aviation Requirements (JAR) are published on behalf of the Joint Aviation Authorities. Their status is that they are recognised by the Civil Aviation Authorities of the Participating European Countries as an acceptable basis for showing compliance with their National Airworthiness Codes. Some countries (including the United Kingdom) have adopted certain codes as their sole National Code. Those adopted by the United Kingdom are set out in Appendix No. 3 under British Civil Airworthiness Requirements.

4  JAA ADMINISTRATIVE AND GUIDANCE MATERIAL

Section One – General – Information Leaflets and General information.

Section Two – Maintenance – Information appertaining to the JAA’s Maintenance Division.

Section Three – Certification – Information appertaining to the JAA’s Certification Division.

Section Four – Operations – Information appertaining to JAA’s Operations Division.

Section Five – Personnel Licensing – Information appertaining to the JAA’s Licensing Division.

Section Five ATPL(A) – Information appertaining to JAA’s Airline Transport Pilot’s Licence (Aeroplanes) learning objectives for theoretical knowledge training.

Section Six – Synthetic Training Devices – Information appertaining to JAR-STD.
JAA Directory – Information appertaining to the structure of the JAA plus names and addresses of individuals and organisations associated with the structure.

Amendments issued three times a year are available by subscription.

4.1 Further details on JAR matters are available from the Central JAA, Saturnusstraat 10, PO Box 3000, 2130 KA HOOFDDORP, The Netherlands.

5 Civil Aircraft Airworthiness Information and Procedures (CAP 562) Civil Aircraft Airworthiness Information and Procedures (CAAIP) are published by the Civil Aviation Authority providing information on a variety of matters concerned with civil aircraft during manufacture, overhaul, repair and maintenance.

6 AIRWORTHINESS NOTICES (CAP 455)

6.1 Airworthiness Notices are available on the CAA web site at www.caa.co.uk under the heading Publications.

6.2 Paper copy is issued free of charge to:
- each Licensed Aircraft Engineer; and
- each Organisation Approved under the Air Navigation Order;

who write in to Requirements and Policy Unit, 1E Aviation House Gatwick, W Sussex RH6 0YR or Fax 01293 573838 requesting such.

6.3 Thereafter, one copy of each new and revised Notice will be issued during the period of validity of the licence or approval, as appropriate.

6.4 Suitable binders for filing the Notices are available to buy from Documedia Solutions Ltd or any good stationers.

6.5 Complete sets of Notices may be purchased from Documedia Solutions Ltd at the address in paragraph 1, with the option to subscribe to them for paper copy of amendments. Alternatively, you may register on the CAA web site for e-mail notification of amendments which can then be printed from the web.

6.6 Owners of Aircraft on the British Register and owners participating in the Permit to Fly schemes of the Popular Flying Association or British Microlight Aircraft Association who wish to maintain their paper copy, should subscribe to the amendment service from Documedia Solutions Ltd or register for e-mail notification from the web site.

7 THE INTERNATIONAL REGISTER OF CIVIL AIRCRAFT

7.1 The International Register of Civil Aircraft holds official information from the aircraft registers of many of the world’s countries. The information is held on a database which is updated quarterly by direct submissions from over 50 countries including USA. Currently, details on over 415,000 aircraft are held on the database. The degree of information held for each aircraft varies according to the amount of data supplied by the relevant national authority. Full information is held for most aircraft and comprises such information as registration marks, aircraft type, registered owners and their addresses, airworthiness details, aircraft weights and aircraft capacity.

7.2 The International Register of Civil Aircraft is targeted at meeting the information needs of people and companies whose businesses and interests revolve around the national and international aviation industries, in particular airports, the financial services sector, the legal profession, the insurance market, the engineering sector and the marketing sector.

7.3 The basic version of the International Register of Civil Aircraft is published on the internet at www.aviation-register.com and on CD-ROM. The CD-ROM is published quarterly in two versions, the Basic and Extensive versions. Both versions are fully featured databases with sophisticated search functions.

7.4 The Extensive version of the CD-ROM allows extensive data manipulation by the user. Information from the database can be downloaded to word-processors, spreadsheets or
other database programs. Users are able to produce their own customised mail-outs and reports or source market survey information according to personal requirements.

7.5 The Basic version has the full functionality of the Extensive version but does not allow the user to download data for manipulation in other applications.

7.6 Credit card (other than Diners Club and American Express cards) and debit card orders may be made by telephone or fax to the numbers mentioned below. Payment by cheque is also acceptable. A separate price list and order form can be obtained from the address below.

Aircraft Registration Section
Civil Aviation Authority
CAA House Telephone: 020 7453 6666
45-59 Kingsway Facsimile: 020 7453 6670
London WC2B 6TE e-mail: aircraft.reg@srg.caa.co.uk

8 UNITED KINGDOM REGISTER OF CIVIL AIRCRAFT INFORMATION SERVICES

8.1 The UK Register of Civil Aircraft contains specific information on over 16,000 aircraft registered in the United Kingdom. The Aircraft Registration Section at the CAA administers the system and continuously updates information on registered aircraft that change registration details each year. Much of the information held on the Register is available to the public and industry.

8.2 The Aircraft Registration Section of the Civil Aviation Authority markets a number of products and services relating to information on the UK Register of Civil Aircraft.

8.3 G-INFO is a comprehensive single source database of civil aviation in the UK offering data taken directly from the official UK Register of Civil Aircraft, information which is accurate as of the first day of each month.

Supplied on CD-ROM, G-INFO will run on PCs running Windows 3.1 or higher, it requires approximately 10 mb of hard disk space. It is available on a one-off basis, or, by annual subscription, on a monthly or quarterly basis.

8.4 G-INFO comes in two formats:

(a) ‘G-INFO (full version)’ replicates information held against each aircraft on the UK Register of Civil Aircraft including all registered ownership and technical details for each aircraft registered in the UK. Information can be retrieved by making searches on individual fields such as registration mark, aircraft type or serial number, and users are able to make use of sophisticated filter options for more precise and defined searches. Users are able to produce their own customised mail-outs and reports or source market survey information according to personal requirements.

(b) ‘G-INFO ‘LITE’’ This has the full functionality of G-INFO but does not allow the user to download data for manipulation in other applications.

8.5 The CAA website also contains the G-INFO database and the same information at www.caa.co.uk/srg/aircraftregister/ginfo/search. It is usually upgraded nightly.

8.6 ‘PRINTED REPORTS AND MAILING LABELS’ Printed reports of extracts from the UK Register of Civil Aircraft and mailing lists (in the form of pre-printed adhesive labels) of current registered owners are also available on an ad hoc basis.

8.7 ‘PUBLIC ACCESS’ The UK Register of Civil Aircraft database is available, via a computer terminal, at the Aircraft Registration Section between 1000 hr and 1600 hr on every working day.

8.8 ‘TELEPHONE ENQUIRIES (0906) 8515747’ A telephone service is available on the above number between 0900 and 1700 hr every working day to obtain information on individual aircraft. Calls are charged at current BT premium call rates.

8.9 Credit card (other than Diners Club and American Express cards) and debit card orders may be made by telephone or fax to the numbers mentioned below. Payment by cheque is also acceptable. A separate price list and order form can be obtained from the Aircraft Registration Section, see paragraph 7.6 for address details.
9  **CAA APPROVED ORGANISATIONS (CAP 475)**

9.1 This is a list of Organisations, approved by the UK CAA under the Air Navigation Order and Joint Aviation Authorities. It is published as a loose-leaf volume and re-issued three times a year. It is issued free of charge to all CAA Approved Organisations.

9.2 Additional copies including binders may be purchased.

10  **SYLLABUSES OF EXAMINATION FOR AIRCRAFT ENGINEERS**

10.1 *Aircraft Maintenance Engineers' Licence* The syllabus for this is contained in Section L of the British Civil Airworthiness Requirements (CAP 468).

11  **FOREIGN AIRWORTHINESS DIRECTIVES**

11.1 *Foreign Airworthiness Directives Volumes I and II – CAA Additional Airworthiness Directives (CAP 473)* Lists CAA Additional Airworthiness Directives applicable to aircraft, engines, propellers and equipment of USA design. Revisions are issued monthly.

**NOTE:** FAA summaries of Airworthiness Directives for Small Aircraft and Rotorcraft, and Large Aircraft are associated with the above CAP and must be obtained along with bi-weekly supplements from the Superintendent of Documents, Government Printing Office, PO Box 371954, Pittsburgh, PA 15250-7954 USA.

11.2 *Foreign Airworthiness Directives Volume III (CAP 474)* Lists Foreign Airworthiness Directives and CAA Additional Airworthiness Directives applicable to aircraft, engines, propellers and equipment designed outside the USA. Revisions are issued monthly.

12  **MANDATORY AIRCRAFT MODIFICATIONS AND INSPECTIONS SUMMARY (CAP 476)**

Lists with their associated Airworthiness Directive numbers, modifications, inspections and service bulletins declared mandatory by the CAA for aircraft, engines, propellers and equipment of UK design. Revisions are issued monthly.

13  **AIRCRAFT RADIO EQUIPMENT (CAP 208)**

13.1 The Air Navigation Order Article 15 (5) requires all radio and radio navigation equipment installed in or carried on aircraft registered in the United Kingdom to be of a type approved by the Civil Aviation Authority in relation to the purpose for which it is to be used.

(a) *Volume 1: Minimum Performance Requirements (second edition January 1991, last reprint October 1996, but now out of print)* CAP 208 Volume 1 is now considered to be obsolete in that it no longer represents the minimum performance requirements that the Civil Aviation Authority applies to radio equipment approvals. The document has historical value as the basis of approval of radio equipment which is still approved.

For the minimum performance requirements to be applied to radio equipment reference should be made to JAR-TSO (Technical Standard Orders), published by the JAA, which outlines the relevant EUROCAE or RTCA minimum operational performance standards for the different types of equipment.

(b) *Volume 2: Radio Equipment Approved for Use in United Kingdom Registered Civil Aircraft (third edition, August 1995 last reprint December 1999 – but now out of print)* CAP 208 Volume 2 is now considered to be obsolescent in that it no longer represents a complete and definitive record of aircraft radio equipment approved by the Civil Aviation Authority which may currently be used in aircraft radio installations. The document has historical value as the record of radio equipment which has been approved.

Alternative means of making the information on aircraft radio equipment approvals available are being investigated. In the meantime any enquiries concerning the approval status of aircraft radio equipment should be made to the Safety Regulation Group, Systems Department by:-
telephone on 01293 573132 (alternative number 01293 573138); or
fax on 01293 573975; or
e-mail to aircraft.systems@srg.caa.co.uk.

CAP 208 Volume 2 lists radio equipment approved, according to the general approval procedures given in BCAR A4-8 (CAP 553) and B4-8 (CAP 554) together with BCAR Section R (CAP 472), by the Civil Aviation Authority for use in UK registered civil aircraft and indicates, where appropriate, the purposes for which it may be used. This volume was last updated in September 1999.

**NOTE:** CAP 208 Volume 2 does not include radio equipment approved by National Aviation Authorities of JAA Member States under JAR-21 or the associated JTSO Authorisations. Reference should be made to the Register of JTSO Authorisations maintained by the Central JAA and published in the JAA Administrative & Guidance Material.

### 14 TYPE CERTIFICATE DATA SHEETS (CAP 477)
These Data Sheets constitute the documentation associated with Type Certificates which are issued by the CAA to signify approval of the design of certain types of aircraft. The data sheets are contained in a loose-leaf binder.

**NOTE:** The description Type Certificate Data Sheet is only applicable to Type Certificates for aircraft. Type Certificates are also issued for engines but the associated data sheets are described as Engine Type Certificate Data Sheets.

### 15 LIGHT AIRCRAFT MAINTENANCE SCHEME

#### 15.1 Light Aircraft Maintenance Schedules
These Maintenance Schedules have been prepared for use with aeroplanes and helicopters the MTWA of which does not exceed 2730 kg. Separate Schedules, approved by the CAA, are available for aeroplanes (CAP 411) Issue 1 and helicopters (CAP 412) Issue 1 (see also Airworthiness Notice No. 63).

#### 15.2 Light Aircraft Maintenance (CAP 520)
This publication provides general guidance on the implementation of the light aircraft maintenance scheme (LAMS) for aircraft not exceeding 2730 kg MTWA, with a Certificate of Airworthiness in the Transport, Aerial Work or Private Category (see also Airworthiness Notice No. 63).

### 16 LOG BOOKS
The following are available:

**Aircraft Exceeding 2730 kg MTWA**
- Aircraft Log Book – CAP 408
- Engine Log Book – CAP 391
- Variable Pitch Propeller Log Book – CAP 388
- Modification Record Book – CAP 395

**Aircraft Not Exceeding 2730 kg MTWA**
- Aircraft Log Book – CAP 398
- Engine Log Book – CAP 399
- Variable Pitch Propeller Log Book – CAP 400
- Time Limited Task and Component Change Record – CAP 543

### 17 OCCURRENCE REPORTING SCHEME

#### 17.1 The Mandatory Occurrence Reporting Scheme – Information and Guidance (CAP 382)
The Mandatory Reporting legislation is contained within the Air Navigation Order and Regulations. The scheme is fully described in CAP 382 and CAAIP (CAP 562) Leaflet 13-3. CAA Occurrence Report Forms (CA 1673) may be obtained from the Documedia address in paragraph 1.
17.2 Progress Report – CAA Response to Air Accidents Investigation Branch (AAIB) Safety Recommendations These Reports are published annually in response to the Secretary of State for Transport’s request to the Authority for Reports on the status and progress on its responses to the Recommendations made to the Authority by the Air Accidents Investigation Branch. Each Report contains those Recommendations remaining Open from the previous report and any new Recommendations received by the CAA since its publication.

17.3 Occurrence Publications These contain summarised information derived from occurrence reports covering not only airworthiness but a broad field of aircraft incidents and defects which could affect the safe operation of aircraft. The documents which are available are:

(a) The Digest – issued monthly
(b) New Reportable Occurrences – issued monthly in 3 sections, as under:
   • Fixed Wing Occurrences
   • Rotary Wing Occurrences
   • ATC Occurrences
(c) Follow-up Action on Occurrence Report (FACTOR) – issued as required.

17.4 Any or all of these publications are made available without charge to any UK organisation participating in the Occurrence Reporting Scheme e.g. UK Operators, Aircraft Maintenance or manufacturing organisations, ATC Units or organisations, Airfield management etc. The publications are also available by annual subscription to any individuals or organisations worldwide who can show a legitimate interest in flight safety, as defined in the CAA Regulations. For details of eligibility and prices, applications should be made in accordance with Paragraph 2.

18 GENERAL AVIATION SAFETY INFORMATION LEAFLET (GASIL) Issued every other month, on the first Friday in February, April, June etc. This Leaflet contains summaries of the more serious occurrences affecting general aviation aircraft and operations. Factual information, CAA comments and, when appropriate, advice on remedial or preventative measures, are included. In addition it contains other items of interest to general aviation including airspace information. A Helicopter Section, CAA News and an Engineering Section are included. Leaflets on specific subjects and posters are included from time to time. A listing with brief details of all General Aviation occurrences received by the Safety Investigation and Data Department during the previous 8 weeks is also included.

19 AIR NAVIGATION – THE ORDER AND REGULATIONS The Statutory Instruments concerned with Air Navigation are published by Her Majesty’s Stationery Office and are obtainable from The Stationery Office, PO Box 276, London SW8 5DT. The publishing responsibility for the Loose Leaf Edition of these documents has been transferred from The Stationery Office to CAA. A CAA Edition (CAP 393), contains the Air Navigation Order, the Rules of the Air, the Air Navigation (General) Regulations and six other associated documents.

20 UK ADDITIONAL REQUIREMENTS AND SPECIAL CONDITIONS FOR THE CERTIFICATION OF FOREIGN CONSTRUCTED AIRCRAFT (CAP 480) This publication contains the Additional Requirements for Certification (Special Conditions), specified by the CAA following design investigation of Foreign Constructed aircraft types, which must be satisfied before UK certification is granted.

21 CONDITION MONITORED MAINTENANCE: AN EXPLANATORY HANDBOOK (CAP 418) This publication provides general information and guidance on the concepts and practices of aircraft maintenance control by the use of Condition Monitoring; this is a process in which in-service information is collected and analysed on a continuing basis, as a means of implementing corrective procedures.
22 CAA AIRWORTHINESS SPECIFICATIONS

22.1 The CAA recognises certain general Industry Specifications dealing with aeronautical products (e.g. BSI Specifications). However, over a number of years it has become necessary for the CAA also to issue certain Specifications, where no suitable Industry Specification has been developed.

No. 1 Safety Belts . . . . . . . . . . . . . . . . . . . . . . Issue 5 24 Sept. 1979
No. 2 Inflatable Liferafts . . . . . . . . . . . . . . . . . . . Issue 2 1 Nov. 1985
No. 3 Tests for Seats with Safety Belt attached. . . Issue 2 10 July 1953
No. 4 Safety Harnesses . . . . . . . . . . . . . . . . . . . . Issue 2 1 Feb. 1962
No. 5 Inflatable Lifejackets . . . . . . . . . . . . . . . . Issue 2 23 Nov. 1979
No. 6 Escape Chutes . . . . . . . . . . . . . . . . . . . . . Issue 2 21 June 1956
No. 7 Break-in Points . . . . . . . . . . . . . . . . . . . . . Issue 2 8 Aug. 1962
No. 9 Child’s Flotation Cot . . . . . . . . . . . . . . . . Issue 1 9 April 1957
No. 10 Flight Data Recorder Systems . . . . . . . . Issue 1 1 May 1974
No. 10A Flight Data Recorder for Aeroplane Accidents Investigation . . . . . . Issue 1 1 June 1990
No. 12 Underwater Sonar Location Devices Approval, Installation and Maintenance . . . Issue 1 1 May 1974
No. 13 Safety Belts with One Diagonal Shoulder Strap . . . . . . . . . . . . Issue 1 24 Sept. 1979
No. 15 Public Address Systems . . . . . . . . . . . . . . Issue 1 27 Jan. 1989
No. 16 Automatically Deployable Emergency Locator Transmitters for Helicopters . . . Issue 1 29 Nov. 1985
No. 17 Wheels and Wheel Brake Assemblies Minimum Performance Standards . . . . Issue 1 18 Sept. 1986
No. 18 Flight Data Recorder for Helicopter Accident Investigation . . . . . . . . . . . Issue 1 June 1990
No. 19 Helicopter Crew Member Immersion Suits . . . . . Issue 1 15 April 1991
No. 20 Passenger Protective Breathing Equipment (PPBE) Smoke Hoods . . . . . . Issue 1 9 May 1988
No. 21 Helicopter Public Address Systems . . . . . . Issue 1 28 March 1998

22.2 It should be noted that the Airworthiness Authorities Steering Committee has issued JAR TSO which states the procedures to be followed where it is wished to obtain approval and identify an article with a JAR TSO marking. Associated with this JAR is a series of JAR TSO Specifications corresponding to the FAA TSO Specifications. The CAA intends that where a Specification is issued in the JAR-TSO series, and the CAA finds that it adequately covers the subject matter and applicability of one of the CAA Specifications here, it will then withdraw the CAA Airworthiness Specification.

23 AIR OPERATORS’ CERTIFICATES – ARRANGEMENTS FOR ENGINEERING SUPPORT (CAP 360, PART TWO) This publication gives information for use by applicants for, and holders of, Air Operators’ Certificates, regarding the engineering support arrangements to be provided by the Operator, in order to obtain the grant, variation or continuation of an Air Operator’s Certificate. The requirements have sections covering Maintenance Support

24  **MASTER MINIMUM EQUIPMENT LISTS (MMEL)**

24.1 The MMEL defines those systems and items of equipment which may be unserviceable at the commencement of a flight to the satisfaction of the CAA in accordance with Article 16 of the UK Air Navigation Order 2000. Civil Aviation Publication (CAP 549) defines the aircraft types for which MMELs are required in terms of weight and the categories in which they are certificated.

24.2 The aircraft types for which there are currently CAA approved MMELs are listed in the two Appendices to this Notice. Appendix No. 1 lists those prepared by the CAA and Appendix No. 2 lists those prepared by the appropriate Type Certificate or Supplemental Type Certificate Holder. Enquiries regarding MMELs should be made to the Safety Regulation Group address in paragraph 2 and the price of a complete copy or an extensive revision of an MMEL may be found in Airworthiness Notice No. 25, paragraph 4.15(c), ‘Copies of Documents’.

24.3 The current status of JAA approved MMELs can be found at the following web site address:

www.jaa.nl/divisions/public_area.html

Enquiries regarding JAA approved MMELs should be addressed to the JAA Operations Director at the address listed in paragraph 4.1.

25  **MANDATORY PERMIT DIRECTIVES (CAP 661)** For aircraft operating on a Permit to Fly. Contains Mandatory Permit Directives that are required to be complied with by UK Operators of Permit to Fly aircraft. Revisions are issued in January and July of each year.

26  **CANCELLATION** This Notice cancels Airworthiness Notice No. 6, Issue 48, dated 29 October 2001, which should be destroyed.
# Aircraft types having an MMEL obtainable from the CAA

(Status as at 1 February 2002)

<table>
<thead>
<tr>
<th>Aircraft type</th>
<th>Revision No.</th>
<th>Temporary Revision No.</th>
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<tbody>
<tr>
<td>Aerospatiale AS332C, AS332L, AS332L1</td>
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<tr>
<td>Aerospatiale AS 332L2</td>
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<td>Aerospatiale SA365</td>
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<td>Airbus Industrie A300-600</td>
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<td>Airbus Industrie A319/ A320/ A321 (CAA Supplement)</td>
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<td>ATR 42</td>
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<td>BAe (HS) 125 Series B up to 800B</td>
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<td>Beech B90/ C90/ C90A/ E90</td>
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<td>Beech 100/ A100</td>
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<td>Beechjet 400/ 400A and MU300</td>
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<td>G4</td>
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<td>Bell 214ST</td>
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<tr>
<td>Bell 212/ 412</td>
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<td>G3</td>
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<td>Boeing 707-300 Series</td>
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<td>Boeing 727-100 and 200 Series</td>
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<td>Cessna Citation CE-650 (CAA Supplement)</td>
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<td>G4</td>
</tr>
<tr>
<td>Cessna 414 and 421</td>
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<td>Temporary Revision No.</td>
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<td>Cessna 525 (CAA Supplement)</td>
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<td>De Havilland DHC 7</td>
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<td>Embraer EMB 110</td>
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<td>Lockheed L 188 Electra</td>
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<td>Lockheed L 1011 Tristar</td>
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<td>McDonnell Douglas DC 10 (Models 10 and 30)</td>
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<tr>
<td>Sikorsky S61N/NM</td>
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Enquiries concerning the MMELs listed in this Appendix should be made in writing, to the CAA addressed:

Civil Aviation Authority,
Safety Regulation Group,
Aviation House,
Gatwick Airport South,
West Sussex,
RH6 0YR.

For the Attention of the MMEL Section.
Aircraft types having an MMEL obtainable from the Type Certificate or Supplemental Type Certificate Holder

(Status as at 1 February 2002)

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Enquiries concerning the MMELs listed in this Appendix should be made to the Type Certificate or Supplemental Type Certificate Holder.
## British Civil Airworthiness Requirements (BCAR) and Joint Aviation Requirements (JAR) Status At March 2003

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* Codes which have been replaced will not be subject to amendment, but are available for modifications to, and derivatives of, existing products. Moreover, the earlier codes are still valid for many in-service aircraft (e.g. Section D is applicable to the Lockheed L1011 Tristar) as the JAR codes have been applied only to those aircraft certifications conducted after the date of adoption of the JARs.

A notification of amendment service covering Sections A, B, L, Q, R, S, T and BCAR 31 and including reissues and amendments but not issues of new Sections, is provided to all purchasers of these publications from Documedia Solutions Ltd. or is available by registering for e-mail notification on the CAA web site.

For amendments to JAR codes please contact Rapidoc, Willoughby Road, Bracknell, Berkshire RG12 8DW.
Cessna 300 And 400 Series Aircraft – Fuel Icing

1 Since 1973 there have been several cases of severe engine power loss on Cessna Models 310 and 421 aircraft. The power loss has been caused by icing of the fuel at the fuel manifold valve. At the time of the early incidents the CAA informed all owners and operators of the affected aircraft of the problem, and subsequently prescribed limitations relating to minimum ambient air temperatures and the use of Isopropyl Alcohol.

2 Cessna Aircraft Company subsequently issued Service Letter ME 73-25 drawing attention to the use of fuel additives for cold weather operation. This Service Letter only contained recommendations for application, and quoted a different ambient air temperature for use of the fuel additive. This notice overrides the temperature limitation laid down in Cessna Service Letter ME 73-25.

3 There have been further cases reported of power loss on Cessna 421 aircraft in 1975, and the CAA feels that the original advice of the limitations imposed may not have found its way to new owners.

4 The CAA, therefore, draws the attention of all operators of Cessna 300 and 400 Series aircraft fitted with Continental fuel injection engines to the fact that to avoid power loss the following must be observed.

4.1 If the aircraft is to be flown in ambient temperatures of -23°C (-10°F) or below, then Isopropyl Alcohol in a concentration of 1% by volume must be blended into the fuel.

4.2 Continental Aircraft Engine Service Bulletin M 73-3 Revision 1, dated August 13th 1973, gives guide lines on the blending of the alcohol into the fuel. Isopropyl Alcohol to Specification BS 1595 or MIL-F-5556 is acceptable.
Piston Engines Supplied In Kit Form

1 Teledyne Continental Motors of America is offering 0-200-A piston engines for sale in kit form, i.e. the parts necessary to build the engine are supplied unassembled.

2 This Notice is issued to state applicable CAA requirements where such an engine is for use in a UK-registered aircraft which has, or is intended to have, a Certificate of Airworthiness in any category. The requirements of this Notice, whilst based on general principles, apply for the present only to the circumstances of this case and could be subject to variation for application to similar schemes by other manufacturers.

3 The CAA requires to be satisfied on the following points:
   (a) That there is an adequate definition of the parts that constitute a complete assembled engine.
   (b) That all parts used are supplied with normal release documentation.
   (c) That the assembly has been properly carried out by appropriate personnel and duly certified.

4 The following requirements apply according to where the assembly is carried out:
   (a) Engines assembled in the United Kingdom
       (i) The engine must be assembled by a suitably licensed Aircraft Maintenance Engineer or by a suitably Approved Organisation.
       (ii) Following the prescribed bench acceptance test the release of each 'new' engine must then be accompanied by an Engine Inspection and Test Certificate in accordance with BCAR Section A, Chapter A4-2, paragraph 7.4 and a log book which must contain a list of any modifications incorporated and a statement of compliance with any mandatory requirements that may be applicable to the engine type.
       (iii) An identification plate is also required to be fitted, showing a recognised serial number. Unless the manufacturer is prepared to issue an identification number upon receipt of the appropriate documentation it will be necessary to apply to the CAA for an allocated number.
   (b) Engines assembled in the USA. Engines assembled in the USA and imported into the UK must be accompanied by an Export Certificate of Airworthiness.
   (c) Engines assembled in countries other than the USA and the UK. In principle, such engines are not eligible for use in a UK-registered aircraft which has, or is intended to have, a Certificate of Airworthiness in any category unless adequate evidence of acceptable build is available (e.g. Export Certificate of Airworthiness). A log book, listing any modifications, and an identification plate, showing a recognised serial number, would also be required. Since engines assembled in this way may reach the UK either as spares or fitted in imported aircraft, prospective purchasers are advised, in any case where doubt exists, to consult the CAA’s Propulsion Department.
5 CANCELLATION This Notice cancels Airworthiness Notice No. 9, Issue 2, dated 30 April 1984, which should be destroyed.
Aircraft Maintenance Engineers' Licences – Type Ratings

1 INTRODUCTION
1.1 This Airworthiness Notice No. 10 sets out the Type Ratings that may be endorsed upon a BCAR Section L for Aircraft Maintenance Engineers’ Licence or a JAR-66 Aircraft Maintenance Licence issued by the United Kingdom Civil Aviation Authority in respect of the certification of aircraft registered in the United Kingdom, including also their engines and systems.

NOTE: A licence can only be used to certify for non-commercial air transport. Aircraft which are operated for commercial air transport must be maintained by a JAR-145 Approved Organisation and all staff who certify for maintenance within those organisations must be in possession of a valid certifying authorisation (see Airworthiness Notice No. 14).

1.2 Following the full implementation of JAR-66 on 1 June 2001, type ratings in respect of types of aircraft of 5700 kg MTOM and above, or the engines or systems fitted to such aircraft, are not available to holders of Aircraft Maintenance Engineers’ Licences issued under Issue 14 of BCAR Section L which came into effect on 1 June 2001, or subsequent issues. Holders of licences granted under earlier issues of Section L, and which already include the appropriate LWTR, may continue to apply for such type ratings until the privileges are transferred to a JAR-66 licence. Full information may be found in the current issue of BCAR Section L.

2 GENERAL
2.1 The requirements for the grant, extension and renewal of Aircraft Maintenance Engineers’ Licences are contained in the current Issue of BCAR Section L. For full understanding of the requirements, Section L must be read in conjunction with this Airworthiness Notice No. 10.

2.2 The requirements for the grant, variation or renewal of Aircraft Maintenance Licences are contained in the current issue of JAR-66. For full understanding of the requirements, JAR-66 must be read in conjunction with the relevant JAA Administrative and Guidance Material, this Airworthiness Notice No. 10 and, where appropriate, JAR-145. Unless endorsed to the effect that National certification privileges, in respect of UK registered aircraft which are not used for commercial air transport, may be exercised, a JAR-66 licence must be used in conjunction with a JAR-145 certification authorisation (see JAR-145 and Airworthiness Notice No. 3).

2.3 The requirements of BCAR Section L and JAR-66 recognise the standards prescribed by the International Civil Aviation Organisation (ICAO) for the grant and extension of licences.

3 APPLICABILITY
3.1 Where a type of aircraft (or its engines or systems) is defined by one of the Group Type Ratings in paragraphs 5 to 9, 12, 13 or 15 of this Notice, an engineer may exercise the certification privileges in respect of that type, subject in particular to the provisions of Airworthiness Notice No. 3 and provided that:

(a) he holds a valid United Kingdom Type Rated Licence, endorsed with National certifying privileges in the case of a JAR-66 licence, in the appropriate Category, endorsed with the appropriate sub-division of this Notice, and
(b) an aircraft of the type is registered in the United Kingdom and holds a United Kingdom Certificate of Airworthiness.

3.2 Where a type of aircraft (or its engines or systems) is listed individually within paragraphs 5, 6, 7 and 10 of this Notice, the licence holder has certification privileges in respect of the individual types as listed on the licence, subject in particular to the provisions of Airworthiness Notice No. 3.

3.3 Where a type of aircraft (or its engines or systems) is not defined by a Group Type Rating or is not listed by name, an application for the Type Rating of a licence in respect of that type of aircraft, engines or systems, will be considered provided that:

(a) an aircraft of the type is registered in the United Kingdom and holds a United Kingdom Certificate of Airworthiness, and

(b) the aircraft is not of a type which is defined in paragraph 14 of this Notice.

3.4 In respect of aircraft types maintained under JAR-145, the CAA will consider applications for the endorsement of type ratings on a BCAR Section L licence where the aircraft type rating is required for the issue of a JAR-145 certification authorisation and:

(a) The aircraft is a type which is not registered in the United Kingdom and does not hold a United Kingdom Certificate of Airworthiness but is registered in a JAA member state, and

(b) The aircraft is less than 13 610 kg (30 000 lb) MTWA.

NOTE: JAA registered aircraft greater than 13610 kg MTWA will be classified as a type which is defined in paragraph 14 of this Notice. Such type ratings will not be issued on a BCAR Section L licence but are available on a JAR-66 licence.

4 CATEGORIES 'A' 'B' 'C' 'D' AEROPLANES, ENGINES AND ROTORCRAFT

4.1 Specific Type Ratings

4.1.1 Type Ratings may be granted for specific aircraft and/or engines defined by, or listed in, paragraphs 5, 6 or 7 of this Notice, except as indicated in sub-paragraphs 4.1.2, 4.1.3 and 4.1.4.

4.1.2 A Type Rating in Category ‘B’ – Aeroplanes, will not be granted in respect of an unpressurised aeroplane exceeding 5700 kg MTWA, an aeroplane in which the primary structure is of reinforced plastic/epoxy manufacture, or any pressurised aeroplane.

4.1.3 A Type Rating in Category ‘D’ – Engines, will not be granted in respect of a piston engine with a power rating exceeding 500 kW (670 bhp), or any jet- or propeller-turbine engine.

4.1.4 A Type Rating in Category ‘B’ – Rotorcraft, will not be granted in respect of a turbine-engined rotorcraft exceeding 2730 kg MTWA.

4.2 Group Type Ratings

4.2.1 A Group Type Rating granted in relation to sub-paragraphs of paragraph 5, 6 or 7 of this Notice includes all the aeroplanes, engines, or rotorcraft defined by that sub-paragraph except as limited by sub-paragraphs 4.2.4 or 4.2.5.

4.2.2 Group Type Ratings for Categories ‘A’ and ‘C’ may be granted for a group of aeroplanes, engines or rotorcraft defined by sub-paragraphs 5.0, 5.1, 5.7, 5.7.1, 5.9.1, 6.0, 6.3, 7.1 or 7.3 only.

4.2.3 Licence holders with Group Type Ratings in Categories ‘A’, ‘B’, ‘C’ or ‘D’ for sub-paragraphs 5.2, 5.2.1, 5.3, 5.3.1, 5.4, 5.5, 5.5.1, 6.1, 6.2, 6.3.1 and 6.4 may continue to exercise the privileges of the licence for the types defined by these groups subject to any limitations endorsed on the licence.

4.2.4 Group Type Ratings for Category ‘B’ – Aeroplanes or rotorcraft, may be granted for sub-paragraphs 5.1, 5.7, 5.7.1, 7.1 and 7.3, excluding any rotorcraft exceeding 2730 kg MTWA.

4.2.5 Group Type Ratings for Category ‘D’ – Engines may be granted for sub-paragraphs 6.0 and 6.3, and includes rotorcraft and airship engines, but excludes engines with a power rating exceeding 500 kW (670 bhp).
4.2.6 Sub-paragraphs indicated thus * in this Notice are not obtainable as new endorsements on a licence.

5 CATEGORY ‘A’ AND ‘B’ AEROPLANES

5.0 Composite Materials Aeroplanes Not Exceeding 5700 kg MTWA (not available in Category B).

5.1 Wooden and Wood and Metal Aeroplanes:
Aeroplanes where the primary structure is manufactured from wood or combinations of wood and metal.

5.2 *Unpressurised metal aeroplanes not exceeding 2730 kg MTWA.

5.2.1 *Unpressurised metal aeroplanes not exceeding 2730 kg MTWA with fixed landing gear only.

5.3 *Unpressurised metal aeroplanes not exceeding 5700 kg MTWA.

5.3.1 *Unpressurised metal aeroplanes not exceeding 5700 kg MTWA with fixed landing gear only.

5.4 *Unpressurised metal aeroplanes, but excluding aeroplanes defined in paragraph 14 of this Notice.

5.5 *Pressurised metal aeroplanes not exceeding 5700 kg MTWA and all unpressurised metal aeroplanes, but excluding aeroplanes defined in paragraph 14 of this Notice.

5.5.1 *Pressurised and unpressurised metal aeroplanes not exceeding 2730 kg MTWA.

5.6 Individual types of pressurised aeroplanes exceeding 5700 kg MTWA, but excluding those aeroplanes defined in paragraph 14 of this Notice.

5.6.1 Due to the significant changes in the type since it was first introduced, the type rating for the Boeing 737 will be grouped to cover the following variants:
B737-100 and -200 series
B737-300, -400 and -500 series
B737-600, -700 and -800 series
Existing holder of the Category ‘A’ B737 type rating will qualify for the B737 up to and including the 500 series. Licences will be updated at the next licence renewal or extension. The 600/700/800 may be added subject to satisfactory completion of a differences course or full course. Licence holders who want their licences to be modified to reflect the new arrangements sooner should send their licences to Personnel Licensing at Aviation House, Gatwick (see Airworthiness Notice No. 29).
New applicants for a B737 type rating will be granted a rating or ratings corresponding to the variants covered by the recognised training course.

5.7 Unpressurised metal aeroplanes not exceeding 5700 kg

5.7.1 Unpressurised metal aeroplanes not exceeding 2730 kg MTWA

5.8 Unpressurised metal aeroplanes exceeding 5700 kg MTWA

5.9 Pressurised metal aeroplanes exceeding 2730 kg MTWA, but not exceeding 5700 kg MTWA

5.9.1 Pressurised metal aeroplanes not exceeding 2730 kg MTWA

6 CATEGORY ‘C’ AND ‘D’ – ENGINES

6.0 Diesel engines in aeroplanes.

6.1 *Unsupercharged reciprocating piston engines, excluding Diesel engines, fitted with a fixed pitch propeller.

6.2 *Unsupercharged reciprocating piston engines, excluding Diesel engines, fitted with a fixed or variable pitch propeller.

6.3 Category ‘C’ Piston engines in Aeroplanes, excluding Diesel engines.
Category ‘D’ Piston engines not exceeding 500 kW (670 bhp) in Aeroplanes/Rotorcraft/ Airships, excluding Diesel engines.
6.3.1 *Piston engines, excluding Diesel engines, in Aeroplanes not exceeding 2730 kg MTWA.

6.4 Jet-turbine engines in Aeroplanes not exceeding 22.25 kN (5000 lbf) static thrust including where so endorsed the associated APU installations.

6.5 Individual types of propeller turbine engines in aeroplanes (including, where so endorsed, the associated APU installations):

- Allison 250
- Garret Airesearch TPE 331
- General Electric CT7
- Rolls Royce Dart
- Rolls Royce Tyne
- Pratt & Whitney Canada PT6
- Pratt & Whitney Canada 118
- Turbomeca Astazou

**NOTE:** For engines annotated ☼ or ☀ see Airworthiness Notice No. 3, sub-paragraph 4.4.

6.6 *Jet turbine engines, in aeroplanes, exceeding 22.25 kN (5000 lbf) static thrust including where so endorsed the associated APU installation.

7 CATEGORIES ‘A’ AND ‘C’ AND ‘B’ – ROTORCRAFT

7.1 Piston-engined rotorcraft.

7.2 Reserved.

7.3 Turbine-engined rotorcraft not exceeding 2730 kg MTWA.

**NOTE:** This paragraph includes the Allison 250 and Turbomeca Arriel engines which are annotated ☀ for the purposes of Airworthiness Notice No. 3, sub-paragraph 6.4.

7.4 Individual types of turbine-engined rotorcraft exceeding 2730 kg:

- Aerospatiale SA 330 with Turbomeca Turmo
- Aerospatiale AS 332 with Turbomeca Makila
- Aerospatiale SA 365 with Turbomeca Arriel
- Agusta 109E with P&W Canada 206 series
- Bell 212 with P&W Canada PT6T
- Bell 214 with General Electric CT7
- Bell 222 with Lycoming LTS 101
- Bell 412 with Pratt & Whitney PT6
- Eurocopter EC135 with Arriel (increased all up weight versions)
- Eurocopter EC155 with Arriel
- MBB BK 117 with Lycoming LTS 101
- McDonnell Douglas 900 with P&W Canada 206 series (increased all up weight versions)
- McDonnell Douglas MD902 with P&W Canada 206 series
- Sikorsky S58 with P&W Canada PT6T
- Sikorsky S61 with General Electric CT58
- Sikorsky S76 with Allison 250
- Sikorsky S76 with P&W Canada PT6B
- Sikorsky S76 with Turbomeca Arriel
- Westland W30 with RR Gem
- Westland S55 with BS Gnome
- Westland Wessex 60 with BS Gnome

**NOTE:** For an engine annotated ☼ or ☀ see Airworthiness Notice No. 3, sub-paragraph 6.4.
8 CATEGORY ‘X’ INSTRUMENTS

(a) A Rating granted in relation to any of the sub-paragraphs 8.1 to 8.4 inclusive, includes all of the instruments fitted to those aircraft in which are installed systems defined by or listed in that sub-paragraph excluding those aircraft listed in paragraph 10, and as limited by paragraph 3 of this Notice.

(b) A Rating granted in relation to sub-paragraph 8.8 relates to Instruments – Direct and remote reading compasses only, but excludes compasses on those aircraft listed in paragraph 10, and is limited by sub-paragraph 3.3 of this Notice.

NOTE: (1) A Type Rated Licence which is valid for paragraphs 8.2, 8.3 or 8.4 also includes paragraph 8.1.

NOTE: (2) A Type Rated Licence which is rated for Category ‘X’ – Instruments now includes the INS, GPWS and compass systems, (excluding compass compensation and adjustment) whether or not these systems are separately endorsed on the licence.

NOTE: (3) Where a system is a combined flight director/automatic pilot the rating does not include items of equipment associated solely with the automatic pilot.

8.1 General aircraft instrument systems but excluding instruments installed on any aircraft which has installed a Flight Director System.

8.2 Smiths Flight System

8.3 Sperry Zero Reader ZL1, ZL2 Flight Director System.

8.4 Flight Director Systems employing air driven gyroscopes (attitude).

8.5 Reserve.

8.6 Reserve.

8.7 Reserve.

8.8 ‘X’ Instruments (compasses)

Direct and remote reading compasses.

9 Category ‘X’ – Electrical

A rating granted in relation to any sub-paragraph of paragraph 9 of this Notice includes the generation system and the electrical installation in aircraft as defined by that sub-paragraph, as limited by paragraph 3 of this Notice.

NOTE: A Type Rated Licence which is valid for paragraphs 9.2 or 9.3 also includes paragraph 9.1.

9.1 Aircraft in which the main generation system output is dc (including alternators having a self-contained rectifier system) and in which secondary alternators having an individual power rating not exceeding 1·5 kVA may be fitted.

9.2 Aircraft in which the main generation system output is dc and which have installed ‘frequency wild’ alternators with an individual power rating exceeding 1·5 kVA for auxiliary services.

9.3 Aircraft in which the main generation system output is ‘frequency wild’ ac and dc power is supplied from transformer rectifier units.

9.4 Aircraft in which the main generation system output is ‘constant frequency’ ac from alternators driven by constant speed drive units, or variable speed constant frequency (VSCF) generator/converter systems, and dc power is supplied from transformer rectifier units.

10 Combined Category ‘X’ – Instruments and Automatic Pilots

10.1 Type ratings may be granted for specific aircraft fitted with instrument and automatic pilot systems that have an automatic landing capability or potential. Such type ratings will no longer be identified by a paragraph number but by the airframe and engine combination of the type.
A type rating granted in relation to this paragraph includes all the general instrumentation, flight director and automatic pilot systems, INS, GPWS and compass systems (excluding compass compensation and adjustment) installed in the aircraft as limited by paragraph 3 of this Notice.

New type ratings for the Boeing 737 will be granted in the following groups 737-100/200, 300/400/500 or 600/700/800 corresponding to the variant(s) covered by the approved training course.

Existing holders of paragraph 10.1.6 for the B737 series aircraft will be considered to have qualified on aircraft up to and including the -500 series, i.e. Boeing 737-100/200 and Boeing 737-300/400/500. The 600/700/800 series aircraft may be added subject to satisfactory completion of a differences course or full type course. Those persons already authorised on the Boeing 737-600/700/800 series aircraft by a CAA approved organisation, where such authorisation is based upon suitable differences or full type training, may continue to be authorised despite the type rating not being endorsed on the licence.

10.1.1 Deleted
10.1.2 Deleted
10.1.3 Deleted
10.1.4 *BAC One Eleven series excluding 510
10.1.5 *BAC One Eleven 510
10.1.6 *Boeing 737 series as defined above in this paragraph.

11 RESERVED

12 Category ‘R’ – Radio A rating granted in relation to any sub-paragraph of paragraph 12 of this Notice includes all the types of radio systems listed in that sub-paragraph, as limited by paragraph 3 of this Notice.

NOTE: A Type Rated Licence in Category ‘R’ – Radio includes Ground Proximity Warning Systems only when the licence is endorsed to that effect.

12.1 * Airborne Communication Systems.
12.2.1 Airborne Communication systems and Airborne Navigation systems installed in aircraft below 5700 kg MTOM, excluding HF communications systems, Passenger entertainment systems, Multiplex systems, CVR and Satellite communication systems.
12.3 Airborne radar systems.
12.3.1 Airborne radar systems installed in aircraft below 5700 kg MTOM, excluding weather radar and TCAS.

13 CATEGORY ‘X’ – AUTOMATIC PILOTS

A rating granted in relation to any sub-paragraph of paragraph 13 of this Notice includes all the automatic pilot systems defined by that sub-paragraph when installed in aircraft, excluding those aircraft listed in paragraph 10, and as limited by paragraph 3 of this Notice.

NOTE: (1) A Type Rated Licence which is valid for paragraph 13.2 also includes paragraph 13.1.
A Type Rated Licence which is valid for paragraph 13.3 also includes paragraphs 13.1 and 13.2.
A Type Rated Licence which is valid for paragraph 13.5 also includes paragraph 13.4.

NOTE: (2) For the purpose of licensing, automatic stabilisers are deemed to be automatic pilots.

NOTE: (3) Automatic pilots include related systems such as yaw dampers and/or roll dampers, mach trim systems and automatic throttle systems.

13.1 Non-Radio-Coupled Automatic Pilots (Aeroplanes)
13.2 Radio-Coupled Automatic Pilots (Aeroplanes) excluding ILS Coupled (LOC and GS) Automatic Pilots
13.3 ILS Coupled (LOC and GS) Automatic Pilots (Aeroplanes)
13.4 Non-Radio-Coupled Automatic Pilots (Rotorcraft)
13.5 Radio-Coupled Automatic Pilots (Rotorcraft)

14 Aircraft 13 610 kg (30 000 lb) MTWA or greater for which maintenance is carried out and certified under company approval

Certain types of aircraft and non-rigid airships are required to have their maintenance accomplished and certified by Approved maintenance organisations. Reference should be made to Airworthiness Notice No. 14 and its Appendix. Type Ratings will not be granted under BCAR Section L for such aircraft or their respective engines or systems. The list of such aircraft at the date of this Notice is as follows:

14.1 Pressurised Aeroplanes

Aerospatiale/ BAC Concorde
Airbus A300
Airbus A300-600
Airbus A310
Airbus A319
Airbus A320
Airbus A321
Airbus A330
Airbus A340
ATR 42, ATR 72
Bombardier/Canadair CL600
Bombardier/Canadair CL601
Bombardier/Canadair CL604
British Aerospace/Avro 146 & RJ series
British Aerospace ATP/Jetstream 6100
British Aerospace/ Hawker 1000
Boeing 727
Boeing 747
Boeing 757
Boeing 767
Boeing 777
Cessna 750
Dassault Falcon 900
DHC-7
DHC-8
Dornier 328
Douglas DC9/MD80 series
Douglas DC10
Embraer EMB 135/145
Fokker 50
Fokker 70
Fokker 100
Gruman Gulfstream IV
Lockheed L-188
Lockheed L1011
Shorts SC5 Belfast
NOTE: (1) This list is not exhaustive. Where a JAR-145 organisation maintains an aircraft registered outside the UK the aircraft type may fall within the criteria for inclusion in this paragraph. Organisations should contact the Personnel Licensing Department to verify if this is the case.

NOTE: (2) The Combined Category ‘X’ – Instruments/Automatic Pilots (Aeroplanes) LWTR is the licence required by engineers authorised to issue certifications in respect of instruments or automatic pilots on aircraft which have an automatic landing capability or potential.

14.2 Unpressurised aeroplanes: None.

14.3 Rotorcraft:
Boeing Vertol 234

14.4 Airships:
Skyship 500
Skyship 600

15 COMPASS COMPENSATION AND ADJUSTMENT

16 JAR-66 CATEGORY B1, B2 AND C TYPE RATINGS

Under the new Joint Aviation Requirements for certifying staff, the requirements for licence issue are specified in JAR-66. It is possible to obtain a type rating for aircraft above 5700 kg in accordance with the provisions of this requirement. This includes aircraft which are listed above in paragraph 14 of this Notice and aircraft which are registered and operated in another JAA member state but which are maintained under a JAR-145 approval.

The aircraft types are listed in Chapter 23 of the JAA Administration and Guidance Material and will be granted only where JAR-147 approved type training has been completed to the appropriate Category B1, B2 or C syllabus and the required practical experience, if appropriate, can be demonstrated.

Current Section L licence holders will be entitled to protected rights under JAR-66 on existing licence and authorisation privileges. Section L group type ratings may not be transferred directly onto JAR-66 licences, except for purposes of reflecting continuing National privileges, and aircraft types over 5700 kg MAUW may need to be individually identified. Future amendments to JAR-66 may further influence this policy.

17 CANCELLATION

This Notice cancels Airworthiness Notice No. 10, Issue 22, dated 25 October 2002, which should be destroyed.
The Rebuilding And Restoration Of Aircraft

1 INTRODUCTION  The CAA has been made aware that additional guidance is necessary for those engaged in the rebuilding or long term restoration of aircraft, to alert them to the airworthiness requirements and the monitoring of such projects by the Civil Aviation Authority Regional Offices.

2 DEFINITION
2.1 Restoration is a generic term that may include any one or combination of overhaul, repair, inspection, modification or replacement activity which is to be performed on an aircraft where the UK Certificate of Airworthiness or Permit to Fly has lapsed for some years. Such an aircraft is likely to require extensive dismantling and inspection to determine the extent of work needed to restore it to an airworthy standard.

2.2 Aircraft rebuild projects may include the return to an airworthy condition of any aircraft where the UK Certificate of Airworthiness or Permit to Fly has ceased to be in force due for example to accident or incident damage, the use of major parts from other aircraft of the same type, significant corrosion or major overhaul.

3 BACKGROUND
3.1 From time to time the CAA is not made aware of major restoration or rebuild projects until they have reached the final stages of completion. This means that the necessary CAA stage inspections or surveys have not been carried out.

3.2 In many restoration cases the necessary repairs including the production of parts no longer available from the original manufacturer, have not used approved data such as the original manufacturer’s repair manual or design drawings, and have been outside the scope of the certification privileges of the Licensed Engineer. A number of rebuild projects have used structural components and major assemblies where the provenance and traceability of the parts fitted has been questionable.

3.3 For aircraft which held Certificates of Airworthiness, all replacement parts must either conform to the part number specified by the manufacturer for the particular aircraft type, model and serial number, or be approved under modification procedures in accordance with BCARs. All replacement parts from whatever source must be serviceable and accompanied by appropriate documentation.

3.4 In the cases described in paragraphs 3.1 and 3.2 there have been delays in the CAA approval of the project and subsequent issue of the Certificate of Airworthiness or Permit to Fly and in some cases dismantling has been required to enable inspections to take place which could have been avoided by regular contact between the Licensed Engineer (or owners) and CAA Regional Offices.

4 REQUIREMENTS
4.1 The attention of Licensed Engineers concerned with major rebuilding projects or the long term restoration of aircraft is directed to the relevant chapters of BCAR Section A and B, in particular:
BCAR A/B3-2 Paragraph 1.3
requires that for a Certificate of Airworthiness to be issued on the basis that the aircraft is ‘Series’ it must be “similar in every essential respect to the design of an aircraft for which a Certificate of Airworthiness has previously been issued”. If this is not the case the aircraft design and construction must be verified against the original manufacturer’s drawings and data and any additional modification data produced by an appropriately approved design organisation.

BCAR A3-2 Paragraph 4
requires that the aircraft must be constructed under the supervision of an organisation approved by the CAA for the purposes. The restorer or rebuilder must show proof that the major components proposed for use on the restored or rebuilt aircraft are original, i.e. were manufactured by or for, the organisation who obtained the first Certificate of Airworthiness or Type Certificate for the aircraft or that they are an approved alternative. Failure to provide sufficient proof will result in the aircraft being refused either a Certificate of Airworthiness or a Permit to Fly.

BCAR A/B6-2 Paragraph 7.3
states that a Certificate of Release to Service shall only be issued for overhaul, repair, replacement, modification or inspection when the signatory is satisfied that the work has been properly carried out having due regard to the use of manuals, drawings, specifications and the use of calibrated tooling.

BCAR A/B6-7 Paragraph 2
requires that in the case of structural repairs to aircraft, where the repairs are of a major nature or not covered in a particular approved Repair Manual, the Approved Organisation or the appropriately licensed maintenance engineer concerned, shall advise the nearest CAA Regional Office of the nature of the repairs before the work commences.

BCAR A/B2-5 Paragraph 2.1.4
requires that all modifications, except those which are agreed by the CAA to be of such a nature that airworthiness is not affected, shall be approved.

AIRCRAFT WITH PERMITS TO FLY
All of the foregoing BCAR references apply to aircraft with Certificates of Airworthiness. For aircraft holding Permits to Fly, the CAA needs to be satisfied that similar standards have been achieved, including, as far as possible, reference to original drawings and data. This should include compliance with the Airworthiness Approval Note for the particular aircraft being restored. (These aircraft are not accepted by the CAA as series aircraft).

5 PROCEDURES

5.1 In the case of a rebuilding or restoration project expected to exceed fifteen months duration, the local CAA Regional Office (see Airworthiness Notice 29 Appendix 2 for UK Regional Office addresses) must be advised of the project at the earliest opportunity. This will allow for a preliminary assessment by a Regional Office Surveyor of the extent of the restoration work required and initial acceptance of the applicant’s proposals regarding sourcing of parts and components to be used in the restoration.

5.2 Normally, if the Regional Office Surveyor decides that the restoration or rebuilding project is of such a magnitude that regular inspections will be necessary, a Special Survey will be needed. Alternatively, it may be necessary, by virtue of the extent of the rebuild or restoration required that a major modification will be needed instead of a Special Survey to record and approve the proposed repairs or replacements. If this is the case the Regional Office Surveyor will advise the potential applicant accordingly.

5.3 An application for a Special Survey or (where advised) a major modification, should be made by the owner to Applications & Certifications Section at Aviation House, Gatwick (see Airworthiness Notice No. 29 Appendix 1).
5.4 Following acceptance by CAA of an application for a Special Survey it will not be necessary to make an application for the subsequent issue of a Certificate of Airworthiness or the renewal of the Permit to Fly, as the case may be, until the final stages of completion unless a modification which has not previously been approved is to be embodied on the aircraft. In some cases it may be that following a Special Survey, no recommendation can be made by the Regional Office surveyor for the renewal of the Certificate of Airworthiness or Permit to Fly. In these cases the applicant will be advised of the reasons why the aircraft could not attain certification and any Certificate of Airworthiness or Permit to Fly fee already paid will be refunded. The cost of the Special Survey will however still have to be met by the applicant.

6 CANCELLATION This Notice cancels Airworthiness Notice No. 11, Issue 1, dated 30 September 1996 which should be destroyed.
Experience From Incidents

1
From time to time incidents occur, usually in aircraft operations, which, in the opinion of the CAA, reflect the need for a general awareness of possible hazard resulting from practices which may have a wide general application. The purpose of this Notice is to advise all concerned, particularly design and engineering staff engaged in aircraft construction or operation, of such incidents which have come to the notice of the CAA, and where necessary to prescribe action to be taken.

2
New incidents will be advised in Appendices to this Notice, and the List of Current Appendices will be updated with each issue. Periodically older appendices will be withdrawn from this Notice and where appropriate, transferred to Civil Aircraft Airworthiness Information and Procedures (CAP 562) Part 11. List 1 below details appendices current to this Notice and list 2 details those appendices which have been cancelled or transferred to CAP 562.

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### 3 CANCELLATION

This issue of Airworthiness Notice No. 12 cancels Issue 51 dated 29 October 2001, which should now be destroyed.
Foreign Objects and Loose Articles – Danger of Jamming

1 Jamming of aircraft flight control systems by foreign objects and loose articles such as those identified below continues to be a major threat to aircraft safety. Approved Organisations, Aircraft Owners and Licensed Aircraft Engineers must remain alert to the hazards of entrapment of such items and ensure that adequate precautions are taken to prevent items falling into or being left in critical areas. Good design, high standards of cleanliness and the implementation of standard practices can reduce the risks of such incidents. However the awareness of personnel involved in all aspects of aircraft operation is one of the most important elements in preventing such potentially dangerous incidents.

2 As the presence of foreign objects and loose articles can cause jamming or restriction of engine and flight control systems, organisations involved in the manufacture, operation and maintenance of aircraft, should establish standard practices to address foreign object and loose article control. Such practices should require personnel to check that all equipment, tools, rags or any loose objects/articles, which could impede the free movement and safe operation of a system(s), have been removed and that the system(s) and installation in the work area are clean and unobstructed.

3 In particular maintenance personnel are the front line of defence against such problems. As such they should remain vigilant of the need to remove foreign objects and loose articles during and after any scheduled or non-scheduled maintenance. Consideration should also be given to the potential to introduce loose articles into control systems from adjoining structure e.g. loose or incorrectly torqued fasteners. While a structure may remain safe with one fastener missing, the aircraft safety may be severely compromised if that fastener jams a control system.

NOTE: The Duplicate Inspection is intended to ensure the correct operation and assembly of controls, it will not prevent loose articles or foreign objects from becoming a hazard to their continued safe operation.

Some of the reported incidents:

- Throttle movement found to be stiff due to a broken plastic spoon, lodged between throttle levers and adjacent components in throttle pedestal.
- A bolt lodged between a flying control hydraulic-booster jack and its chassis.
- Hydraulic fluid top-up cans and meal trays fouling primary control runs.
- A spare control rod left in a fin by the constructor, causing intermittent jamming of rudder and not found during twelve months of operation.
- A nut left on a control chain adjacent to the sprocket, causing the chain to fail and jamming one flap surface.
- A ring spanner which had remained undiscovered for two and a half years in a wing bay which had been opened several times for control systems inspection.
- An incorrectly fitted screw on a fin leading edge which rolled across the top of the fin and jammed the elevator during the take off climb.
- A rudder pedal control jammed during taxi checks due to a coat hanger in a footwell.
- The AAIB investigation of an accident involving a jammed elevator, found numerous foreign objects which potentially may have restricted control system movement.
Emergency Escape Provisions – Doors and Escape Slides

1 During several emergency evacuations, difficulty has been experienced in opening aircraft doors and in deploying the associated inflatable escape slides. Subsequent investigations have shown that the difficulties were due to various reasons such as incorrect rigging of door assist mechanisms, incorrect packing of the inflatable, incorrect installation, safety pins being left in, ageing/wear of items, design shortcomings, fitment of incorrect parts. In a significant proportion of cases however, no reason for failure could be determined.

2 Current maintenance requirements include regular inspection, inflation checks and overhaul of the escape slide assembly. However, this may not give an indication of faults or deterioration that could result in the evacuation system not being available for its intended purpose. It is considered therefore, that slides should be tested on the aircraft by opening the doors with the slides armed and a check made to ensure that they deploy and inflate correctly as expected in an emergency evacuation. It is appreciated that this alone will not guarantee correct future operation of all slides on any particular aircraft, but it will provide a level of confidence on the reliability of slide and door operation.

3 For all aircraft fitted with inflatable escape slides which are automatically deployed by the opening of emergency exits, slides must be deployed as part of a slide deployment programme on the aircraft by the automatic release and inflation of the slide in accordance with paragraph 3.1 or 3.2 of this notice. It is recommended that when feasible the slide deployment should be carried out by cabin crew, in order to better replicate the emergency condition.

3.1 Every slide on the aircraft should be deployed when it becomes due for overhaul in accordance with the manufacturer’s recommended intervals. This period should not exceed 36 months.

3.2 Operators can develop a slide deployment sampling programme, with the agreement of the CAA as part of the Approved Maintenance Programme. This programme must ensure that, on each aircraft type, a sample of at least 10 or 10%, whichever is the greater, of all the exits in the fleet, will have been deployed within an elapsed period of not more than two years. The sampling programme must ensure a reasonably uniform distribution of the exits on that aircraft type. Inadvertent slide deployments should not be included in the slide deployment sampling programme but should still be investigated if the slide fails to deploy correctly.

4 Details of the operators slide deployment programme should be included in the Approved Maintenance Programme or Schedule.

5 Every operator should define it’s own pass / fail criteria which should be accepted by the local Regional Office. The pass / fail criteria should be based on any recommendations made by the aircraft or slide manufacturer and would be expected to include at least the following as failures:

- Failure of the automatic deployment system (i.e. manual inflation required);
- Failure of the door to fully open;
- Door assist failure (if fitted);
- Failure to fully inflate;
• Failure to fully inflate within 10 seconds (unless otherwise specified by the manufacturer). Timing is from when the door is initially actuated until the slide is deployed in a useable state;
• Complete failure of slide lights to illuminate
All the above failures must be reported to the authority using the mandatory occurrence reporting (MOR) scheme and to the aircraft type certificate holder.

6 To assist in the slide deployment failure investigation, unless otherwise agreed by the CAA, all slide deployments must be recorded by video or other similar means and copies of failed deployments should be held for a minimum of one year or until any MOR or investigation into the failure has been closed. A copy should be made available to the CAA on request.

7 All slide deployment failures must be investigated to determine the cause of failure and action taken to prevent similar occurrences. The type certificate holder and escape slide manufacturer should be kept informed of failure investigations and provide assistance where possible. If there are either high levels of slide failures or slide failure causes cannot be determined it may be necessary, in conjunction with the CAA to carry out further deployment tests, increase the paragraph 3.2 sampling size or remove MEL alleviation until a satisfactory level of reliability is achieved.

8 For each deployment test the door / slide position, slide part number, pass or fail result, date of manufacture of the slide, failure mode and failure cause should be recorded. Operators should forward a summary of slide deployment testing at regular intervals for each aircraft type to the appropriate CAA Regional Office. This summary should include the following information: Number of aircraft in fleet, number of deployments carried out and overall pass rate for fleet.

9 Due to the complexity and safety critical nature of escape slide systems it is recommended that Maintenance Organisations involved in the installation, maintenance and overhaul of escape slides should implement duplicate or independent inspections on critical tasks i.e. slide installation, firing mechanism connections, girt bar installation and rigging, door assist deactivation / slide safety pin removal. Consideration should also be given to the training and competence of personnel involved with the packing, installation, inspection and overhaul of escape slides.

10 Operators should review all escape slide continued airworthiness instructions from the type certificate holder and escape slide manufacturer including service bulletins and service letters and consider embodiment where there may be improvements in escape slide reliability.

When an Operator changes maintenance providers i.e. slide overhauler or aircraft maintenance organisation it must review the slide deployment programme to monitor the affects of such changes on the fleet escape slide reliability.
Self-locking Fasteners

A recent incident investigation concluded that the cause was the loss of a number of bolts, used to secure a helicopter tail rotor drive shaft fairing, and that the bolts were lost because the self-locking function of the associated stiffnuts had become ineffective.

Previous issues of this Appendix 17 highlighted that there have been a number of incidents concerning the use of self-locking fasteners in helicopter control systems. These incidents arose when self-locking fasteners on control system linkages had become detached, allowing the control system to separate. The scope of this Appendix 17 has now been broadened to further emphasise that the hazards associated with self-locking fasteners used in control systems, are also applicable to aircraft access panels on both rotary and fixed wing aircraft.

The disturbance of fasteners to facilitate maintenance tasks may result in degradation of the effectiveness of the friction component. Where the aircraft manufacturer permits the re-use of self-locking fasteners, maintenance personnel are reminded that careful attention must be given to their security, and the effectiveness of the self-locking function.

In every case the aircraft manufacturers’ guidance should be adhered to in relation to the use and re-use of self-locking fasteners. Such fasteners must not be re-used unless the user is satisfied that the self-locking characteristics have not deteriorated to a point where there is an ineffective friction element. Where no guidance is available from the aircraft manufacturer, it is recommended that the guidance given in CAAIP Leaflet 2-5 paragraph 8 (CAP 562), including the advice not to re-use certain fasteners, should be followed.
Lithium Batteries

1 INTRODUCTION

1.1 The development of primary cells employing Lithium in combination with other materials has resulted in the availability of batteries with energy densities which are very significantly higher than those which have previously been achieved. In-service experience and the results of safety tests carried out to Lithium batteries has shown that there is a potential for hazard. It is therefore necessary for users to consider the possible hazardous consequences of abuse or failure of such devices and this Appendix considers the safeguards which should be observed.

1.2 Lithium sulphur dioxide cells have been available for aircraft use for many years but early experience showed the risk of disruptive failure if batteries did not incorporate adequate protective devices. In the USA Technical Standard Order C97 was produced and this has represented an acceptable standard for Lithium Sulphur Dioxide cells, but because other Lithium based systems have now been developed, TSO C97 has naturally become outdated. In 1984 the CAA sought the assistance of the BSI in preparing a British Standard to cover all known systems which was published as British Standard G239; this standard has now been updated and re-issued as 2G 239. Since initial publication of this Appendix, advances in Lithium technology have resulted in Secondary (rechargeable) Lithium batteries becoming available. At present no appropriate standard is available covering the use of these batteries on aircraft. The CAA have again sought BSI assistance in formulating a standard similar to 2G 239 for secondary Lithium batteries. It is the policy of the CAA to continue to implement BS 2G 239 and, in the absence of a specific standard for secondary Lithium batteries, implement the safety requirements defined in BS 2G 239.

2 Intending users of Lithium batteries, as defined in paragraph 3, are advised that the CAA will seek positive assurances regarding the design and build standard of such batteries. The following guidelines should, therefore, be observed:

2.1 The specification for the battery should embrace all the relevant requirements of BS 2G 239.

2.2 The procuring design authority should invoke BCAR Chapter A3-3 requirements for the approval of a Controlled Item and a Declaration of Design and Performance to the format given in BS 2G 239 should be obtained in all cases. This will normally involve a supplier who holds an appropriate approval to BCAR Chapter A8-1 as a Group A1 Company.

2.3 Due regard should be taken of the possibility that some types of cell may fail such that gases will be vented. Such failure is usually associated with accidental electrical charging, the puncturing of cells, or the application of heat. It follows that Lithium batteries should not be installed in proximity to passengers or flight crew if any of these conditions can be foreseen.

2.4 The CAA has approved suitable organisations for the design and manufacture of Lithium batteries. The assembly of batteries by unapproved organisations is not acceptable unless the user can, under the terms of his own approval, demonstrate that such batteries do satisfy the requirements of BS 2G 239. Continuing control of the design standard and production quality of such items should be maintained.

2.5 Where Lithium batteries have been installed in aircraft prior to the issue of this Appendix evidence should be sought that such batteries were approved to TSO C97 or that the safety requirements of BS 2G 239 are met. Should such assurance not be available, as a
minimum, evidence of safe operation under the abusive failure conditions which are relevant to individual installations should be sought.

2.6 When batteries are removed from aircraft at the end of life, it is in the interest of safety that the disposal procedures given in BS 2G 239 be followed.

3 For the purpose of this Appendix a single cell fitted in aircraft as a Line Replaceable Unit (LRU) may be taken as representing a battery and thus be eligible for Accessory Approval (BCAR Chapter A3-3). However, small button cells which are hard wired within equipment may be considered as a component part of the equipment (as defined in Airworthiness Notice No. 39) and be approved within the overall type test. Such cells should be fully assessed by equipment designers, who should be aware of the precautions which need be taken to avoid abusive failures and be able to demonstrate that the effects of failure have been considered. They may, therefore, seek a Declaration of Design and Performance from the cell manufacturer as supportive evidence.

4 Overhaul manuals for equipment containing Lithium batteries or cells should include cautionary notes and refer to the methods of disposal given in BS 2G 239. Attention should be drawn to the corrosive nature of any chemical contamination which may result from disruptive failure, with appropriate advice on cleaning methods.

5 Attention is also drawn to Guidance Note GS43 entitled 'Lithium Batteries' which is published for the Health and Safety Executive by HMSO.
Responsibilities of Engineers who carry out and Certify Maintenance on Aircraft

1 Resulting from an enquiry into a serious incident which occurred to an aircraft on the first flight following maintenance being carried out, the CAA wishes to remind Licensed Aircraft Maintenance Engineers and Authorised Certifying Staff employed by JAR-145 Approved Maintenance Organisations of their responsibilities when issuing Certificates of Release to Service after maintenance.

2 CAA Airworthiness Notice No. 3 specifies the certification responsibilities for Type Rated Licensed Aircraft Maintenance Engineers in relation to Articles 10 and 12 of the Air Navigation Order. Paragraph 1.7 includes the following information relative to the certification of maintenance:

   ‘A Certificate of Release to Service shall only be issued for a particular overhaul, repair, replacement, modification, mandatory inspection or scheduled maintenance inspection when the signatory (signatories are) satisfied that the work has been properly carried out and accurately recorded, 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 JAR-145 requirements apply to Authorised Certifying Staff employed by JAR-145 Approved Maintenance Organisations who should be fully conversant with their content, particularly the following extracts from the requirements which are pertinent when carrying out and certifying maintenance:

JAR 145.40 Equipment, tools and material
(See AMC 145.40)
(a) The JAR-145 approved maintenance organisation must have the necessary equipment, tools and material to perform the approved scope of work.

NOTE: The associated AMC 145.40 (a) states ‘Where the manufacturer specifies a particular tool or equipment, then that tool or equipment should be used unless otherwise agreed in a particular case by the quality department.’

JAR 145.45 Airworthiness data
(See AMC & IEM 145.45)
(a) The JAR-145 approved maintenance organisation must be in receipt of all necessary JAR airworthiness data from the Authority, the aircraft/aircraft component design organisation and any other approved design organisation, as appropriate to support the work performed.

NOTE: AMC 145.30(c) Personnel Requirements. Paragraph 2 states ‘To assist in the assessment of competence, job descriptions are recommended for each job role in the organisation. Basically, the assessment should establish that . C. Supervisors are able to ensure that all required maintenance tasks are carried out and where not done or where it is evident that a particular maintenance task cannot be carried out to the maintenance instructions then such problems will be reported to and agreed by the quality organisation.’
JAR 145.50 Certification of maintenance
(See AMC 145.50)
(a) A certificate of release to service must be issued by appropriately authorised staff on behalf of the JAR-145 approved maintenance organisation when satisfied that all required maintenance has been properly carried out by the JAR-145 approved maintenance organisation in accordance with the procedures specified in the JAR 145.70 maintenance organisation exposition

JAR 145.65 Maintenance procedures and quality system (See AMC & IEM 145.65)
(a) The JAR-145 approved maintenance organisation must establish procedures acceptable to the Authority to ensure good maintenance practices and compliance with all relevant requirements in this JAR-145 such that aircraft and aircraft components may be released to service in accordance with JAR 145.50. IEM 145.65(a) 1 states ‘The maintenance procedures should cover all aspects of carrying out the maintenance activity and in reality lay down the standards to which the JAR maintenance organisation intends to work. The aircraft/aircraft component design organisation standards and aircraft operator standards must be taken into account.’

4 The CAA consider that:
(a) the responsibilities defined in both CAA Airworthiness Notice No 3 and JAR-145 are fundamentally equivalent and require work to be carried out to specified maintenance instructions using recommended tooling and, when working in approved maintenance organisations, in accordance with established procedures.
(b) it is important to adhere to publications which provide instructions for continued airworthiness together with company procedures which lay down the standards for work carried out by Licensed Aircraft Maintenance Engineers, Authorised Certifying Staff and Approved Maintenance Organisations. The privileges of Licensed Aircraft Maintenance Engineers and Authorised Certifying Staff do not include authority to deviate from such instructions or procedures.
Planning and Recording of non-scheduled Maintenance Tasks

1. As a result of an enquiry into a serious incident where incorrect and incomplete documentation was cited as a contributory factor, the CAA wishes to remind all Operators, Certifying Engineers and JAR-145 Approved Maintenance Organisations of the need to prepare complete documentation prior to the work being accomplished which clearly and accurately defines the non-scheduled maintenance task(s) to be undertaken.

2. Non-scheduled maintenance tasks can arise from scheduled maintenance inspections or from defects recorded on operational aircraft. Non-scheduled maintenance tasks require a certificate of release to service be issued when all maintenance relating to the task(s) has been completed.

3. JAR 145.50(b), Certification of maintenance, specifies ‘A certificate of release to service must contain basic details of the maintenance carried out…..’ It therefore follows that the documents recording a non-scheduled maintenance task must contain sufficient detail to enable the Certifying Engineer to determine that it has been carried out to the standard which will enable him to issue a certificate of release to service.

4. Maintenance tasks on aircraft vary in complexity and task cards raised for scheduled maintenance reflect the level of complexity of the specific task. Control of these complex tasks by maintenance personnel at shop floor level is normally simplified by breaking each task down into a number of discrete steps with the provision for appropriately authorised staff to sign/stamp when each step is completed. It is equally important that non-scheduled maintenance tasks are similarly broken down into steps to provide a detailed record of maintenance which is to be carried out and certified on completion of each step or group of steps as they occur. Engineers are reminded of the need for a full and comprehensive hand-over of work outstanding at shift changes.

NOTE: The CAA endorses the use of stage sheets which is good maintenance practice as it enables personnel to record work to be carried out and provide a record of the accomplishment of that work. Human factors studies in engineering repeatedly show that the use of properly prepared stage sheets when carrying out tasks considerably reduces the opportunity for maintenance errors occurring.
AIRWORTHINESS NOTICE No. 12
Appendix 54
Issue 1
7 November 1997

Aircraft Windshields and Transparencies

1 Resulting from a General Aviation accident review, the CAA wishes to draw attention to the importance of maintaining the visibility of windshields and transparencies to ensure that a clear and undistorted view is provided for flight crew.

2 Operators and maintenance organisations are reminded that the optical standard and the standard of cleanliness of cockpit windshields and transparencies can have a direct effect on the flying of the aircraft especially in conditions of poor visibility. A hazy screen blurs the details, reduces black to grey and dims outlines. Dirt or slight scratching scatters the light and may make it impossible for the pilot to see against the sun.

3 Section 7 of the Light Aircraft Maintenance Schedule (LAMS) requires the inspection of windscreens at Check A intervals, with a further inspection of all windows at 50 hour, 150 hour and Annual check periods. Where other maintenance schedules do not refer to this subject, action should be taken to revise the schedule as appropriate.
Control and Use of Rigging Pins

1. A serious incident involving a large commercial air transport aircraft occurred due to an unofficial rigging pin being left in the aileron control system following maintenance. Whilst carrying out full and free control movement checks prior to take off, the first officer felt a restriction in the aileron controls. The aircraft captain confirmed there was a restriction and the aircraft returned to the stand where it was found that a bolt, (instead of the correct rigging pin) was installed in the control wheel rigging pin hole at the base of the Captain’s control column.

2. Subsequent investigations revealed that due to the non availability of the correct rigging pin, (with an attached attention getting red disc/flag), a bolt obtained from a free issue dispensing area was used as an alternative. The correct rigging pin, with a red disc/flag attached, would have been clearly visible at the base of the control column. The bolt used as an alternative was not only difficult to see but effectively camouflaged by two similar and adjacent bolts.

3. All aircraft maintenance engineers, and in particular those holding certification responsibilities, are reminded of the need for vigilance when working on control systems and in particular during rigging operations when rigging pins are being used. In order to minimise hazards associated with rigging pins and to prevent future occurrences the following points should be noted:

   3.1 **Control of Rigging Pins**
      
      3.1.1 All rigging pins should be subjected to a form of control in order that their whereabouts can be established. A tool store procedure which could include visual cues in the form of shadow boards is one possibility.

      3.1.2 All rigging pins should be subjected to serviceability checks prior to use, with particular emphasis being placed on the secure attachment of ‘attention getting’ flags/discs.

      3.1.3 The installation and removal of rigging pins should be controlled by the use of worksheets, or stage sheets. (Airworthiness Notice 12 Appendix 53 refers).

      3.1.4 For maintenance in accordance with JAR-145 requirements, AMC145.40(a) dictates that alternative tools, to those specified by the manufacturer, can only be used by agreement of the organisation’s Quality Department and subject to a control procedure.

   3.2 **Use of Rigging Pins**
      
      3.2.1 Only rigging pins having adequate attention getting devices attached should be used.

      3.2.2 Where any maintenance task necessitates installation of a rigging pin(s), an open entry should be made, to this effect, in the controlling Stage Sheet, Technical Log or Additional Work Sheet at the time of its installation.

      3.2.3 Upon completion of the maintenance task the rigging pin(s) should be removed and the open entry in the Stage Sheet, Technical Log or Additional Work Sheet appropriately annotated and certified.

      3.2.4 Upon completion of any control system rigging operations, full and free movement checks should be carried out as a matter of practise thus providing the final opportunity to locate that forgotten rigging pin.

**NOTE:** The readers attention is drawn to Civil Aircraft Airworthiness Information And Procedures Leaflet 2-13 Control Systems which contains additional information concerning the use of control system rigging pins.
Damage to Packages of Dangerous Goods Caused by Inadequate Securing of Hold Floors

1. Dangerous goods are regularly and routinely carried as cargo in aircraft. A comprehensive set of rules produced by ICAO, the ‘Technical Instructions for the Safe Transport of Dangerous Goods by Air’ ensures that this is a perfectly safe practice. Packaging must meet specific design criteria and be subjected to a stringent test regime before it may be used to contain dangerous goods for air transport. However, a number of incidents have occurred involving damage to metal drums, both in the United Kingdom and world-wide, resulting in leakage of dangerous goods in cargo holds. The damage observed was of a very specific type and occurred to the bases of drums. The vast majority of incidents were experienced after carriage on narrow body aircraft.

2. Certain types of dangerous goods may be consigned in metal drums, the capacity of which can be up to 60 litres when transported on passenger aircraft. The attendant weight of such drums makes it physically impossible for loading staff to lift them in the confined space of the holds of narrow body aircraft. Consequently, drums tend to be dragged to their intended loading position. As part of the investigation into the instances of drum leakage, the floors of 20 cargo holds of narrow body aircraft were inspected. All but one of the floors had securing screws which were protruding to various degrees above the surface of the floor. Some screws had been worn to produce a very sharp edge and loading staff suggested they may also be the cause of injury.

3. Subsequent tests using a simulated hold floor, including screws of the exact type seen during the hold inspection, resulted in drum damage identical to that experienced in incidents. Protrusion of between 0.25mm and 0.5mm was sufficient to cause the damage.

4. Airworthiness Notice No. 12 Appendix No. 6 advised of the potential dangers associated with spillage or collection of any fluid in aircraft; leakage of dangerous goods may present an even greater risk. The attention of operators and maintenance organisations is drawn to the importance of the correct fitting of cargo hold floors, including the need to ensure (where appropriate) screws are secured such that they do not protrude above the surface of the floor panel. Furthermore, particular attention must be paid to the handling of metal drums during their preparation for transport, the type of aircraft on which they are to be carried and the method required to load that aircraft, so that accidental damage is not caused through dragging or other mishandling of the packages. Repetitive findings of damage should result in a review of the maintenance schedule and operating (loading) procedures for effectiveness.
Control of the Use of Pitot Head and Static Vent Blanking Covers

1. A serious incident involving a large commercial air transport aircraft occurred due to the loss of half the primary reference flight instruments readings during take off. The reason for the loss was that pitot head blanking covers had not been removed before flight.

2. The aircraft had been subjected to an overnight stop during which time all four of the pitot head blanking covers were installed.

3. The engineering and flight crew pre-departure check resulted in two of the four pitot head covers being removed. The remaining two were missed, and not removed.

4. The pre-departure check was carried out at night and in rain, thus weather and darkness contributed to the incident.

5. Good maintenance practices dictate that the installation of blanks or covers requires a clear, unambiguous entry in the Technical Log that the aircraft is no longer airworthy as a result of that installation. This practice would assist line maintenance personnel in ensuring the removal of such items before aircraft acceptance by the flight crew.

6. Hence procedures should be instituted by operators and maintenance organisations to control the installation and removal of blanking covers for pitot and static probes.
   6.1 Open entries made, at the time of installation of such blanking cover(s), in the Technical Log, identifying which blanking cover(s) have been installed.
   6.2 Upon removal of the blanking cover(s) the open entry in the Technical Log should be appropriately annotated and certified.
   6.3 Emphasising the use of ‘temporary’ blanking covers, such as masking tape on operational aircraft is not acceptable as it can also result in the type of incident described herein.

7. The reliance of warning or attention getting ‘flags’ attached to blanks or covers are not, in themselves, sufficient to insure their identification and removal before flight. This is especially true when completing aircraft pre-departure checks in darkness or adverse weather conditions.
   NOTE: Operators should consider application of similar practises in respect of other commonly used blanking or locking devices such as landing gear locking pins, intake blanks, external control locks etc.
AIRWORTHINESS NOTICE No. 12
Appendix 58
Issue 1
16 March 1998

Adjustable Seat Locking Mechanisms

1 An investigation into a fatal accident involving a light aircraft concluded that it was caused by the pilot’s seat sliding rearwards during a critical stage of flight. As a consequence of the seat movement, the pilot was unable to maintain control of the aircraft, which resulted in the over-pitching of the aircraft, loss of control and subsequent impact with the ground.

2 The investigation found that the crew seat locking pins were bent, possibly by loads caused by engaging the pins to arrest seat motion, during adjustments of seat position. The CAA therefore, wishes to draw attention to the importance of maintaining the integrity of crew seat locking mechanisms, as the failure may have an adverse affect on the ability of operating crews to retain control of their aircraft.

3 In every case the inspection criteria for adjustable seat locking mechanisms specified in the aircraft’s maintenance schedule or maintenance manual should be observed. In the absence of detailed inspection instructions, seat locking mechanisms, including seat rails, should be visually inspected and checked for correct operation. The visual inspection should include confirmation of freedom from signs of damage, corrosion, distortion and excessive wear. Particular attention should be given to locking pins to ensure that they fully engage into, and disengage from, the associated recesses. Seat travel rollers should be checked for excessive play that may reduce locking pin engagement.
The Consignment By Air Of Aircraft Spares As Cargo Which Meet The Criteria Of 'Dangerous Goods'

1. This Appendix highlights the dangers associated with the improper air transport of aircraft spares and replacement items, meeting the criteria of 'Dangerous Goods';

2. Dangerous Goods are defined as articles or substances which are capable of posing a significant risk to health, safety or property when transported by air and which are classified according to the ICAO’s Technical Instructions for the Safe Transport of Dangerous Goods by Air. Personnel may be more familiar with the field document produced by IATA, the Dangerous Goods Regulations. These reflect the Technical Instructions and as such are a comprehensive set of rules to ensure the perfectly safe practice of transporting dangerous goods.

3. Aircraft components are installed in accordance with prescribed airworthiness specifications such that they do not present a hazard to the aircraft or its occupants. However, this safeguard may not apply to such items if they are removed and shipped as cargo. This was graphically demonstrated by an accident in 1996 in which 110 passengers and crew were killed. This accident occurred following an intense in-flight cargo hold fire caused by the improper carriage as cargo of a number of chemical oxygen generators. These generators had previously been safely installed in aircraft passenger service units (PSUs) but had been removed and shipped in a manner such that they presented an extreme danger when transported as cargo. As a result of this accident, chemical oxygen generators are now forbidden for carriage on passenger aircraft as cargo and may only be carried on a cargo aircraft subject to, amongst other things, very stringent packing requirements which are specified in the Technical Instructions.

4. With the extensive publicity surrounding this accident and the subsequent remedial actions, the dangers associated with chemical oxygen generators are now relatively well known, although incidents involving these items continue to be reported. However, apart from chemical oxygen generators, which are also found in Personal Breathing Equipment (PBE), it is essential to be alert to the possibility that dangerous goods can also be found in various other types of aircraft spares e.g. compressed gases (fire extinguishers, oxygen cylinders, life saving appliances), explosives (engine fire extinguishers, flares), flammable liquids (fuel line components, paint), etc., all of which, when sent as spares, may only be transported as cargo in accordance with the provisions of the Technical Instructions.

5. Anyone consigning dangerous goods for carriage by air has a responsibility under the Air Navigation (Dangerous Goods) Regulations, to ensure that any dangerous goods are prepared for carriage in accordance with the Technical Instructions. It is also a requirement of the Technical Instructions that all staff with duties associated with dangerous goods receive training commensurate with their responsibilities. Any failure to comply with the requirements of the Air Navigation (Dangerous Goods) Regulations is a criminal offence, the penalty for which reflects the potentially very serious consequence of any breach.

6. In summary, aircraft spares and replacement items (i.e. components and equipment) meeting the criteria of dangerous goods, may only be transported by air as cargo in accordance with the ICAO Technical Instructions (or IATA Dangerous Goods Regulations). It is imperative that all personnel with responsibilities either directly or indirectly associated with the transport of these items are aware of this fact. It is also essential that measures are put in place to ensure that dangerous goods can never be offered for air transport when not fully meeting the requirements.
AIRWORTHINESS NOTICE No. 12
Appendix 60
Issue 1
18 March 1999

Fire Hazards

1. The collection of debris, dust and discarded catering materials found in various areas of aircraft has, in a number of cases, created conditions which have resulted in the outbreak of fire or the production of sufficient fumes for an emergency to be declared.

2. Recently reported flight deck incidents have been attributed to:-
(a) the collection of dust around the flight crew foot warmers which subsequently ignited when a high temperature setting was selected;
(b) fumes produced by shorted electrical equipment as the result of metal objects falling onto connections. (As many as 7 metal cutlery knives have been found behind a glare shield).

Fumes have also been produced when equipment cooling systems have collected sufficient dust and lint to drastically reduce the airflow. This has on a number of occasions resulted in the smell of burning and/or smoke and emergency in-flight action having to be taken.

3. Collection of debris in other areas also provides the potential for various electrical sources to ignite combustible materials. Areas such as the void beneath toilet shrouds, behind light fittings and behind sidewall-to-floor panels in the passenger cabin are all places where flammable materials can accumulate. Such accumulations pose an obvious fire risk where electrical equipment and wiring carries sufficient current to create sparks.

4. Modern interior carpeting often produces large quantities of lint which finds its way into equipment cooling filters and toilet smoke detector sampling tubes often resulting in a reduction in performance or complete failure.

5. The design of most aircraft is such that large objects cannot fall into sensitive areas, but the omission of gap fillers, seals, electrical terminal shielding and insulating boots during maintenance can create conditions that may initiate a fire.

6. Maintenance personnel should ensure that design standards of sealing are restored after equipment and panels are refitted and that all loose objects are removed prior to closure.

7. Maintenance Organisations and Operators should ensure that cleaning programmes are designed to address the removal of clogging and combustible materials at regular intervals.

8. Quality sampling programmes should address cleanliness standards of aircraft interiors particularly flight deck areas.

9. Flight crew should be reminded of the dangers of placing any loose objects (including catering) on flight deck glare-shields and pedestals.
Retention of Records - Post Incident and Accident Investigations

1 During an investigation into an engine failure resulting in an air turn back and emergency landing, the record keeping and retention of record period was found to be inadequate and incomplete. Considerable difficulty was experienced during the investigation in tracing the maintenance actions taken during the overhaul of the engine crankshaft which was identified as the cause of the engine failure.

2 Aircraft operators and maintenance organisations are reminded of their responsibility to retain adequate and complete maintenance records as specified and referenced in the following paragraphs for the periods listed.

3 The requirements for retention of maintenance records for aircraft operated in accordance with JAR-OPS are defined in JAR-OPS 1.920 and JAR-OPS 3.920. These requirements clearly place the responsibility for retention of detailed records with the operator, and include details of where an aircraft, engine, propeller, rotor and transmission components, or any vital component is repaired or modified.

4 JAR-145 approved maintenance organisations need only retain a copy of all detailed maintenance records for two years from the date the aircraft or aircraft component was released from the JAR-145 organisation (JAR 145.55). If contracted to keep records on behalf of the Operator then the retention period will be that required by JAR-OPS 1.920.

5 The requirements for retention of records for all other aircraft registered in the United Kingdom should be as defined in the Air Navigation Order Article 17. This requires the Operator of the aircraft to keep Aircraft, Engine and Propeller Log Books. The Log Books must include particulars as specified in the ANO Schedule 6 which include:
   - Paragraph 1(e). Particulars of all maintenance work carried out on the aircraft or its equipment.
   - Paragraph 1(g). Particulars of any overhauls, repairs, replacements and modifications relating to the aircraft.

Also note; any document which is incorporated by reference in a log book shall be part of the log book and it is the duty of the Operator to keep the above records. Every Log Book shall be preserved by the Operator of the aircraft until 2 years after the aircraft has been destroyed or has been permanently withdrawn from use.

6 Consequently, if a JAR-145 approved maintenance organisation carries out work (overhaul, inspection, repair, modification or replacements) on an aircraft NOT operated in accordance with JAR-OPS, then the record retention requirements are as required by the Air Navigation Order.
An investigation into a fatal accident involving a light aircraft concluded that the seat belt failed during a forced landing. The orientation of the stitched joint on the harness and its interaction with a hard object, probably a trouser belt buckle, was cited as the probable cause of the failure.

A high proportion of light aircraft seat belts have the release box, tongue and overlap stitching positioned so that they fall well to the side or behind the occupant’s body when installed and adjusted. These belts are considered satisfactory and are excluded from this notice. Care should be taken to ensure that any overlapped joints do fall behind the body on all occasions allowing for all reasonable variations of adjustment of the seat belt to accommodate a full range of adult human body height and girth.

Where the Original Equipment Manufacturer (OEM) provides instructions on the installation of their seat belts / harnesses, these should be followed.

In the absence of OEM instructions, the CAA would advise using the following best practice.

4.1 During routine maintenance and inspection by owners, the Popular Flying Association, the British Microlight Aircraft Association, licensed aircraft maintenance engineers and approved maintenance organisations, the joint between harness webbing and metal components (release boxes, tongues and adjusters) should be checked.

4.2 Where the webbing reversed overlapped and stitched sections are orientated towards the body, if practical, the joint orientation should be reversed.

Incorrect

Correct
CAA Approval and Continued Airworthiness of the L-3 Communications Model F-800 Digital Flight Data Recorder

1 Recently the CAA has been made aware that the Federal Aviation Administration (FAA) has cancelled the Technical Standard Order (TSO) Authorisation for the L-3 Communications (Formerly known as LORAL Data Systems and Fairchild Aviation Recorders, Sarasota, Florida 34232 USA) Digital Flight Data Recorder Model F-800. This followed reports of several performance problems related to this type of magnetic tape recorder. Some of these problems have caused difficulties for air accident investigators when replays are conducted. The CAA has conducted its own review of the service experience of the Model F-800 and has drawn similar conclusions to those of the FAA.

2 As a result, the CAA has declared the BCAR Equipment Approval Number AR 515 obsolescent. This means that the L-3 Communications Model F-800 Digital Flight Data Recorder may not be newly installed on any UK registered aircraft for the purposes of compliance with any mandatory carriage requirement. (Mandatory carriage requirements are specified in the UK Air Navigation Order (2000), or the Joint Aviation Requirements JAR-OPS, as appropriate.) However, where already installed in a UK registered aircraft, the Model F-800 may continue to be used, serviced and repaired, as necessary, until such time as the aircraft operator chooses to replace it with another model of flight data recorder. In such cases the Model F-800 installation will still be accepted as being compliant with the mandatory carriage requirements.

3 Following the FAA TSO approval cancellation, L-3 Communications no longer manufacture the Model F-800 but they are still providing continued airworthiness support and are continuing to manufacture spares. However, in their Field Service Bulletin No. F800 DFR FSB033, dated 1 April 2000, L-3 Communications have announced that the magnetic tape supply used to manufacture the F800 DFR reel and tape assemblies is being depleted. The projected date for the total depletion of the DFR tape is July 2002.

4 The CAA recommends that aircraft operators and maintenance organisations take these, and any other relevant obsolescence issues into account when reviewing their flight recorder maintenance schedules. Maintainers should ensure that approved replacement parts are acquired to meet future demand.

5 In addition, it should be noted that solid state Flight Data Recorder (FDR) technology meeting EUROCAE ED-55, FAA and JAA TSO-C124a has become widely available. One of the advantages of this technology is that solid state equipment can be designed to be operated under an on-condition maintenance regime.
AIRWORTHINESS NOTICE No. 12
Appendix 64
Issue 1
22 March 2002

MIL-W-22759/16 ELECTRICAL CABLE

1 Background

Electrical Cables meeting the MIL-W-22759/16 specification and similar, having a non-crosslinked Tefzel-ETFE single extruded insulation.

Cables of this type of construction are known to have the following performance limitations:

(a) The insulation of this cable type can lose its mechanical properties (begin to melt) when the cable is subjected to high fault currents or is influenced by an external heat source.

(b) The single extrusion insulation does not provide protection against the propagation of insulation surface damage through to the conductor. Cracks and nicks will propagate through to the conductor.

NOTE: All currently approved airframe cables have two or more layers specifically to provide stress relief protection against the propagation of insulation surface damage through to the conductor. Ref: Notch propagation test EN3475 part 502 and BS 3G230 Test 27.

(c) Non-crosslinked ETFE does not meet industry standard abrasion or cut through requirements even within its stated upper temperature limit.

(d) Compliance with the applicable airworthiness fire test requirements is dependant on the wire gauge and the actual manufacturing process used.

NOTE: The flammability test method detailed in MIL-W-22759/16 is different from the fire test requirements in JAR 25.869 (a)(4), Appendix F Part 1(a) (3) or equivalent and current industry standards. Correlation between the test methods is not possible. Therefore additional testing is required to ensure compliance with the relevant airworthiness fire test requirements.

(e) MIL-W-22759/16 cable will not pass the overload resistance test 31 of BS 3G230 or the equivalent EN3475.

2 Discussion

Aircraft equipment should always be assessed for its suitability for use (fit for purpose) and compliance with relevant certification requirements. Although cable conforming to MIL-W-22759/16 and similar may be shown to be acceptable for use on aircraft, it is not automatically acceptable and for the reasons stated above, particular care must be taken when selecting this cable type to ensure that it meets all installation requirements and is fit for its intended application.

3 Requirement

Users of MIL-W-22759/16 cable and similar cable constructions shall therefore determine the following specific data and information for each application of the cable to demonstrate compliance with the applicable airworthiness requirements:

(a) The installation of the cable shall be assessed as appropriate to its intended application and environment. The proximity of external heat sources shall be considered in particular.

(b) The circuit protection devices and fault current levels shall be chosen to prevent undue heating of the cable insulation (Note: it is undesirable to allow a temperature rise due to electrical heating of more than 40 degrees C above ambient ).

(c) The installation shall mitigate the abrasion hazard to the cable insulation. It shall also be established that the cable is compatible with other cable constructions in the same bundle.
(d) It shall be shown that the actual cable and gauge used meets, as a minimum, the appropriate airworthiness fire test requirements (e.g. JAR 25.869 (a)(4), Appendix F Part 1(a) (3))

(e) Maintenance/inspection procedures with appropriate intervals shall be established to ensure the continued airworthiness of the cable insulation.

4 MIL-W-22759/16 Cable in Existing Installations

MIL-W-22759/16 cable is frequently to be found used in non-TC holder modifications, e.g. US STCs. At the time of import of an aircraft into the UK, it is important that the organizations responsible for submitting statements of compliance to the CAA give due consideration to the points noted above, as instances have been found where MIL-W-22759/16 cable has been used inappropriately, with the consequence that the aircraft has had to be re-wired.

Further information regarding the acceptability of MIL-W-22759/16 cable can be obtained by contacting the CAA-SRG, Aviation House, Systems Department -01293 573325.
Control Cable End Fittings

1 In November 2001 the CAA received information from the FAA of a NTSB investigation of control cable end fittings. The NTSB has investigated the failure of flight control cable end fittings on six aircraft. Four of the failures occurred in-flight, although not leading to serious accident or loss of life.

2 Additional end fittings from some of the incident aircraft as well as from four other aircraft were examined and found cracked. Most of the end fittings had fractured or cracked in a transverse manner through the shaft on the threaded end of the fitting close to the spanner/wrench flats. A few showed evidence of cracking in the swaged portion of the fitting.

3 The NTSB investigation identified a number of common features to the failures and cracking of the end fittings:
   • The material of manufacture of the fittings was a free machining stainless steel grade containing selenium and a high sulphur content.
   • The fittings surfaces were generally corrosion pitted. Where locking wire was wrapped around the fitting it was noted that the pits had a higher density beneath the wire.
   • The predominant fracture mode was stress corrosion cracking, initiated at corrosion pits.

4 Stress corrosion cracking only occurs under specific environmental conditions, in susceptible materials when tensile stresses are induced in the material. The end fittings examined were all taken from light aircraft which had been in service for at least 20 years, however the specific environmental conditions that caused the corrosion have not been identified. Although, not all stainless steels and fittings are considered susceptible, it is not possible to identify the grade of stainless steel used for a fitting by inspection.

5 The initial indication of degradation would be surface pitting of the steel. As the attack progresses surface breaking cracks will become evident, and possibly staining and discoloration of the steel.

6 It is recommended that all control cable end fittings are inspected for degradation when access allows.
Design Organisation Approvals

1 PURPOSE The purpose of this Airworthiness Notice is to provide guidance on recent changes in legislation which may affect holders of a CAA Design Approval, users of their services and potential applicants for such approval.

2 INTRODUCTION
2.1 Design capability has long been recognised by CAA Approval of companies in Groups A1 and E1. Recent changes to BCAR Section A have added new approval groups to complement E1, and to recognise industry needs for competent and flexible organisations able to perform both small and large design tasks to meet CAA requirements.

2.2 These new groups have been introduced in conjunction with a recent change to the Air Navigation Order Article 8(8) which enables the CAA to require applications for the approval of items such as modifications to be supported by reports from suitably CAA approved organisations.

3 REQUIREMENTS
3.1 BCAR, Section A Chapter A8-8, Revision date 1 February 1991, provides for approvals to be issued under three separate groups, E1, E2 and E3. These enable a much wider range of activities to be approved by the CAA than has been possible in the past.

3.2 It is intended that the new approval groups be applied to applicant design organisations who can demonstrate the capability to make statements of compliance supported by reports in areas, the scope of which is defined as follows in BCAR Chapter A8-8:

   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 may include authority to certify design-originated documentation associated with operation, maintenance, overhaul, or repair of the product.

   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.

   E3 Organisations approved to provide reports and to certify that the design standard of a particular aircraft, including its Flight Manual and instructions for continuing airworthiness, conforms to a design standard approved by the CAA for that aircraft type, or differs in a defined manner from the approved type design.

3.3 A company may hold one or more of these approvals. Each of these approval groups is independent from each other. For example, an E1 approval rating does not automatically include either E2 or E3 privileges, nor does E2 include E3. The terms of approval issued by the CAA as part of the Approval Certificate will indicate the group, class, and rating issued to the particular approval holder.
3.4 In the Air Navigation Order 1989, Article 8(8) has been added by the ANO (Amendment) Order 1990 and inserted in CAP 393 as Amendment 5/90. This gives the CAA the right not to accept an application for the approval of a modification unless it is supported by specified reports from an approved ‘person’. The CAA recognises, here, that indiscriminate use of the new power could cause difficulties at times when industry capacity is insufficient. Hence, the CAA intends to use the authority provided by this change, with discretion, so as to:

(a) foster and maintain competent design organisations in order to support aviation in this country;
(b) give industry better control over costs and timescales in respect of the approval of design matters such as modifications;
(c) make the best use of CAA resources through delegation to industry, via the CAA approved organisation system. This will enable CAA staff to concentrate on the approval of the organisation and its associated monitoring, rather than the direct approval of individual modifications.

4 COMPLIANCE

4.1 Approvals Applications for organisation approval, or variation of approval, should be made in the usual way as described in Sub-Section A8. The investigation of the organisation and its procedures will be performed by Design Liaison Surveyors using BCAR A8-8 as the requirements.

4.2 Modification Applications Applicants should initially contact CAA Approved organisations who hold an approval in the Group (E1 or E2) most appropriate to the proposed type of design change. (Note: Names, addresses and approval groups are shown in CAA Publication; CAP 475 Directory of CAA Approved Organisations.)

4.3 Where the applicant is unsure about the need to enlist the services of an appropriately approved organisation (or is unable to establish a suitable arrangement with any approved organisation) he should contact the nearest CAA SRG Area Office (see Airworthiness Notice No. 29) for advice. If, on the basis of this advice, it is determined that the applicant is able to demonstrate that the nature of the modification is sufficiently straightforward as to be supported by his own expertise, he may make a direct application to the CAA in accordance with BCAR Section A Chapter A2-5 or Section B Chapter B2-5. (Normally to the CAA SRG Area Office for a minor modification, or to Aviation House, Gatwick for a major modification.)

4.4 Modification Approval Requirements for the approval of Modifications are set out in Chapter A2-5 of BCAR. Design approved organisations will have arrangements for the CAA to classify modifications as minor or major. In the case of a minor modification, approval will be recorded in the Civil Modification Register of the approval holder. For a major modification, the approval holder will make the necessary application for approval to the CAA in the usual way (see BCAR A2-5). The CAA will signify approval of the modification by forwarding a copy of the final signed Airworthiness Approval Note (AAN), to the applicant and approval holder.

NOTE: For powerplant modification approval, procedures are different in the case of major modifications, an AAN is not normally issued (see BCAR A4-2 paragraph 4.6.)

5 Charges for the approval of persons and in respect of modifications, repair etc., of aircraft (excluding engines) are shown in the CAA Scheme of Charges – Official Record Series 5. (Ref CAP 393 Section 6) or may be found in Airworthiness Notice No. 25.
Approval Of Organisations For Maintenance Of Aircraft And Components, And CAA JAR-145 Implementation

1 PURPOSES

The purpose of this Airworthiness Notice is:

1.1 To provide guidance to UK industry on CAA approval policy with respect to JAR-145 approval of maintenance organisations engaged in the maintenance of aircraft used for Commercial Air Transport or in the maintenance of components to be fitted to such aircraft; and

1.2 To set out CAA policy concerning national maintenance approvals and requirements relating to aircraft NOT used for Commercial Air Transport and relating to maintained components to be fitted to such aircraft.

NOTE: (1) For the purposes of this Notice, ‘Maintenance’ means any one or combination of Overhaul, Repair, Inspection, Modification or defect rectification of a component.

NOTE: (2) The acceptance of new components intended for installation in aircraft issued with a UK Certificate of Airworthiness, irrespective of whether the aircraft is or is not used for Commercial Air Transport, is addressed in Airworthiness Notice No. 17.

2 INTRODUCTION

2.1 The Civil Aviation Authority and other European National Aviation Authorities signed an Arrangements Document referenced Cyprus 11 September 1990, which committed them to co-operate in all aspects related to the safety of aircraft. The National Aviation Authorities that signed the Arrangements Document are each represented on the Joint Aviation Authorities (JAA) Committee which is responsible for the administrative and technical implementation of The Arrangements.

2.2 The Arrangements Document facilitates the development, acceptance and implementation of Joint Aviation Requirements (JARs) for aircraft design, manufacture, continued airworthiness, maintenance and operations, to achieve mutual acceptance and a consistent level of safety throughout the member states.

2.3 The JAA is a registered Trust based in Holland and funded by its members. The individual JAA National Aviation Authorities, as contracting states to the International Civil Aviation Organisation (ICAO), still retain, for their state, full responsibility for the Standards and Recommended Practices designated in each ICAO Annex. Consequently, the CAA still retains full responsibility for the issue of all UK approvals, certificates and licences, even though they may have been issued against a requirement issued by the JAA.

2.4 As at the date of this Notice, full members of the JAA are Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, Romania, Spain, Sweden, Switzerland and the United Kingdom. Other States are in the Candidate Member States group and are not yet full members, as such any JAR-145 maintenance approvals granted by them are not automatically recognised, nor subject to the provisions of this Notice.

2.5 Maintenance policy is to provide a number of interlinking JARs related to maintenance of which JAR-145 covers the approval of organisations engaged in the maintenance of aircraft or aircraft components used for Commercial Air Transport. JAR-145 can be purchased from Rapidoc, Willoughby Road, Bracknell, Berkshire RG12 8DW (Telephone 01344 861666 or...
2.6 Other Commercial Air Transport maintenance related JARs are:

(a) JAR-OPS 1 & 3 Sub Part M The Aircraft Operators Airworthiness Responsibility – effectivity/implementation dates:
   (i) Aeroplanes over 10 tonnes or with 20 seats or more  1 April 1998
   (ii) All other aeroplanes  1 October 1999
   (iii) Helicopters  1 October 1998

(b) JAR-66 Certifying Staff – Maintenance  1 June 1998/2001

(c) JAR-147 Approved Maintenance Training  1 June 1998/2001

2.7 Under European Council (EC) regulation 3922/91 Harmonisation of Technical Requirements and Standards applicable to Civil Aircraft, JAR-145 became a full legal requirement on 1 January 1995 for the maintenance of aircraft and components used for Commercial Air Transport.

2.8 Organisations approved by the CAA to JAR-145 will have details of their approval, including their name, address and capability, published in JAR-145 Administrative and Guidance Material, Section 2, Part 4. JAR-145 Approval granted to organisations by JAA member countries, will be accorded mutual recognition by other JAA NAAs, normally without any further investigation. This includes the acceptance of certificate of release to service (CRS) signatories for JAR-145 Maintenance Organisations qualified in accordance with the provisions of JAR 145.30, 145.35 and JAR 66.1.

2.9 JAA Administrative and Guidance Material Section Two: Maintenance Part Two: Procedures, Chapter 11 sets out the procedures for the provision of Temporary Guidance Leaflets (TGLs). The TGLs are listed in Part Three: Temporary Guidance and are not subject to the Notice of Proposed Amendment (NPA) process on initial publication, hence their adoption is at the discretion of the particular National Airworthiness Authority concerned. Appendix 2 of this AN 14, sets out the CAA adoption policy regarding TGLs which are current at the date of this Notice.

2.10 It is CAA policy to adopt the latest ‘amendment’ to JAR-145 after acceptance by the Joint Aviation Authorities Committee.

3  CAA APPROVAL POLICY FOR JAR-145 REQUIREMENTS

3.1 JAR-145 came into effect on 1 January 1995 for the maintenance of all aircraft when used for Commercial Air Transport (CAT). From that date the certificate of release to service (CRS) required after maintenance of an aircraft or an aircraft component used for Commercial Air Transport, can only be issued by an organisation appropriately approved in accordance with JAR-145 by one of the full member countries listed in paragraph 2.4 of this Notice, or ‘Accepted’ under the terms of an international maintenance agreement (JAR 145.10(c)).

NOTE: It is incumbent upon UK organisations placing maintenance work with ‘Accepted’ organisations in the USA and Canada, to confirm the validity of that ‘acceptance’ as the JAA can provisionally suspend those organisations that do not maintain the required standards.

3.2 Organisations not accepted under the terms of an International Maintenance agreement and located outside the JAA countries, and actively providing or intending to provide, commercial air transport maintenance services for UK Operators or Maintenance Organisations, may apply to the JAA for the grant of a JAR-145 approval. Such an approval, once granted, would be valid for 2 years, and may be renewed if the need were demonstrated.

3.3 Organisations currently approved to BCAR Chapter A8-1 or A8-2 who wish to perform and certify maintenance on their own products, will need to obtain JAR-145 approval where necessary.
NOTE: (1) Such organisations were previously granted this privilege automatically under their BCAR approval but this function is now superseded by JAR-145.

NOTE: (2) An organisation currently approved to BCAR Chapter A8-1 whose product is a complete aircraft, will need to meet the certifying staff requirements of JAR 145.30 if providing an operator of commercial air transport aircraft with aircraft maintenance in support of an Air Operator’s Certificate.

3.4

With effect from 1 June 2001, Organisations applying for Approval under JAR-145 for the maintenance of aeroplanes or rotorcraft with a Maximum Take Off Mass (MTOM) of 5700 kg and above used for Commercial Air Transport will be required to demonstrate to the CAA that they employ, in accordance with the requirements of JAR 145.30, a sufficient number of appropriately qualified certifying staff who hold:

(a) JAR-66 full licences in the appropriate category or sub-category issued by a full member JAA-NAA state including where appropriate the relevant aircraft type ratings, or

(b) JAR-66 restricted licences in the appropriate category or sub-category issued by a full member JAA-NAA state including where appropriate the relevant aircraft restricted type ratings, or

(c) Evidence of 'protected rights' to hold the appropriate type authorisation under the provisions of JAR 66.1 based upon licences, qualifications and authorisations held prior to 1 June 2001.

NOTE: (1) The extension of authorisations based upon the above must be carried out in accordance with the relevant requirements. For JAR-66 licences these are specified in JAR 66.45 and JAR-147 except that where a restricted JAR-66 licence is held, the approved type training to be undertaken may be limited to the restricted scope of the licence.

NOTE: (2) Extensions for type authorisations to existing ‘protected rights’, based upon Section L licences and previous CAA authorisation policy (BCAR A8-13), must meet the relevant type training requirements as appropriate; except that all type training carried out after 1 June 2001 must be carried out by a JAR-147 approved organisation unless agreed otherwise by the CAA. The scope of the authorisations may not be extended without first meeting the additional requirements for the issue of a full JAR-66 basic licence.

NOTE: (3) Extensions for type authorisations to existing ‘protected rights’, based upon the qualifications, licences or the National practices of another full member JAA-NAA state must be made in accordance with the relevant requirements of that state.

NOTE: (4) Organisators must ensure that care is taken in determining what training must be undertaken to extend any authorisation held, since even with restricted JAR-66 licences the imposed limitations endorsed by each JAA-NAA may differ.

3.5

Organisations holding or applying for Approval for the maintenance of Airships must meet the relevant requirements of BCAR Section A, A8-18 and its associated supplements. Certification authorisations will, until such times as appropriate provision for Airship licences has been incorporated into JAR-66, be based upon BCAR Section L, Category ‘A and C’ airship LWTRs. Unless agreed otherwise by the CAA, type training will be required to be conducted by a suitably approved JAR-147 organisation.

3.6

Organisations holding or applying for Approval for the maintenance of aircraft with a MTOM less than 5700 kg will be required to demonstrate to the CAA that they employ a sufficient number of certifying staff, who hold the appropriate type rated licences issued under BCAR Section L, to be authorised to issue certificates of release to service for all required maintenance. Existing authorisation schemes may continue to be used until further notice.

NOTE: It is the JAA’s intention to extend the requirements of JAR-66 for the qualification of certifying staff in respect of aircraft below 5700 kg MTOM through an NPA in the near future.

3.7

Organisations holding or applying for Approval for the maintenance of aircraft components (see JAR 145.5) intended for fitment to aircraft used for Commercial Air Transport, are required to demonstrate to the CAA that they employ sufficient numbers of certifying staff (JAR 145.30(d)), who are qualified by the organisation to issue JAA Form One (Certificate of Release to Service) on the basis of appropriate competence, training and experience.

NOTE: It is the intention of the JAA to include requirements for qualification standards for certifying staff involved in component maintenance in a future amendment to JAR-66.
3.8 JAR-66 became effective on 1 June 1998 and fully implemented for aircraft with a MTOM of 5700 kg and above with effect from 1 June 2001. Organisations should have amended their qualifying procedures and authorisation requirements for certifying staff by 1 June 2001 as noted above to reflect the full requirements of JAR-66 where appropriate. All organisations will additionally have to prepare a list of authorised certifying staff as at 1 June 2001 to reflect the ‘protected rights’ entitlement, the list should be maintained until 1st June 2011. Such lists should be kept up to date and made available for review when requested by the CAA.

NOTE: Where the JAR-145 organisation maintains its authorisation records in electronic format the separate provision of a list is not necessary providing it is quite clear from the record that a determination of the individual’s entitlement to ‘protected rights’ can be made.

4 CAA APPROVAL POLICY FOR NATIONAL REQUIREMENTS

4.1 Organisations which are solely engaged in the maintenance of aircraft not exceeding 2730 kg Maximum Take-Off Mass, with a Certificate of Airworthiness in any category, which are NOT used for Commercial Air Transport, may continue to be approved, or may apply for the grant or variation of an approval, in accordance with the requirements of BCAR Section A Chapter A8-15. An approval granted under this requirement would be a CAA ‘National’ approval.

4.2 Organisations which are engaged in the maintenance of aircraft exceeding 2730 kg Maximum Take-Off Mass, with a Certificate of Airworthiness in any category, which are NOT used for Commercial Air Transport will be subject to the appropriate BCAR Maintenance Approval Group Requirements under BCAR Chapter A8.

4.3 Organisations engaged in the maintenance of components for which there is no intended use for Commercial Air Transport may also apply for Approval in accordance with these Requirements (see 4.1 & 4.2).

4.4 Application for variations to existing maintenance approvals granted under BCAR Sub-section A8 will continue to be accepted by the CAA from organisations where JAR-145 approval is not necessary.

4.5 The CAA also intends to adopt JAR-66 as the basis for qualifying Maintenance Certifying Staff working outside of a JAR-145 Organisation, replacing current licensing arrangements under BCAR Section L. Such provision has already been made for the issue of new licences in respect of aeroplanes and rotorcraft (helicopters) with a MTOM of 5700 kg and above with effect from 1 June 2001. The requirements for BCAR Maintenance Approval Group Requirements under BCAR Chapter A8 will also be reviewed and amended accordingly.

5 CAA APPROVALS

5.1 Organisations which hold JAR-145 Approval or an appropriate CAA National Maintenance Approval may continue to be granted these terms of Approval if they meet the appropriate requirements. There are a number of functions which can be covered by a CAA Approval that are not as yet addressed by JAA Requirements. These functions include (but are not limited to) the following:

(a) To issue Certificates of Maintenance Review in accordance with Article 10 of the Air Navigation Order (as amended) when required.

(b) To issue certificates of release to service in accordance with Article 12 of the Air Navigation Order (as amended) when required.

NOTE: This Approval relates to the certification of work on aircraft and/or components NOT used for Commercial Air Transport.

(c) To issue Certificates of Fitness for Flight in accordance with the provision of BCAR Chapter A/B 3-8, (‘A’ Conditions).

(d) To perform Star Inspections in accordance with BCAR A/B 3-4.

(e) To furnish reports to the Authority in accordance with Article 133 of the Air Navigation Order (as amended) in respect of:
Assessments and recommendations for the Renewal of the Certificate of Airworthiness for aircraft as defined in the Maintenance Organisation Exposition, as Approved in accordance with BCAR A8-15, or as Approved in accordance with BCAR A8-3.

(f) To amend Maintenance, Overhaul, Repair Manuals and Wiring Diagrams in accordance with BCAR A/B 5-3.

(g) Control of Welders Approvals.

(h) Control of NDT schemes in accordance with Airworthiness Notice No. 94.

6 MAINTENANCE OF AIRCRAFT – NON COMMERCIAL AIR TRANSPORT

6.1 Aircraft which are not being used for the purposes of Commercial Air Transport, may continue to be maintained by organisations approved by the CAA for the purpose or by appropriately licensed aircraft maintenance engineers in accordance with the privileges accorded to the licence holder (see Airworthiness Notice No. 3 and 10).

NOTE: Paragraph 4.5 above highlights that, with effect from 1 June 2001, BCAR Section L licences will not be issued in respect of aircraft with a MTOM of 5700 kg and above. It is acceptable to use a UK CAA issued JAR-66 licence which is appropriately type rated to certify for such UK registered aircraft which are NOT used for commercial air transport and outside of a JAR-145 organisation where, so permitted, by the licence and Airworthiness Notice No. 3. Aircraft specified in CAA Airworthiness Notice No. 10, paragraph 14, must be maintained by a JAR-145 approved maintenance organisation irrespective of the purpose for which they are used.

6.2 An organisation currently approved to BCAR Chapter A8-15 whose activities are limited to C of A renewal recommendations and maintenance of aircraft NOT used for Commercial Air Transport, may continue to be approved in accordance with BCAR Chapter A8-15 until further notice.

6.3 Aircraft on the UK Register, which are NOT used for Commercial Air Transport with a Certificate of Airworthiness in any category, may have components fitted which have been released to service in accordance with JAR-145.

6.4 The person issuing the certificate of release to service for the fitting of a component to an aircraft on the UK register, is responsible for ensuring that the records of that component are sufficient to enable its maintenance and operating history to be established, including the embodiment of modifications and mandatory ADs, service life used etc.

7 MAINTENANCE OF AIRCRAFT WHEN CHANGING FROM ANY NON COMMERCIAL OPERATION (NON-CAT) TO COMMERCIAL AIR TRANSPORT OPERATION (CAT)

7.1 Aircraft maintained in accordance with paragraph 6.1 that are in service after the date of this Notice, will require release to service by an appropriately approved JAR-145 organisation, prior to the aircraft being used for Commercial Air Transport. The release to service may, for example, be in accordance with the alignment check required to transfer the aircraft from the current aircraft maintenance schedule to the Commercial Air Transport operator’s CAA Approved Maintenance Schedule.

NOTE: (1) For aircraft of 2730 kg and below, the maintenance checks for this alignment shall be at minimum, but not limited to a 100 hour check for helicopters or a 150 hour check for aeroplanes in accordance with the LAMS or the approved alternative CAA Approved Maintenance Schedule.

NOTE: (2) For aircraft above 2730 kg the Maintenance Check content for alignment shall be agreed by the CAA to be of sufficient depth to provide a satisfactory level of assurance of airworthiness.

NOTE: (3) A JAR 145.50 CRS will be issued on completion of an alignment check as required above.

7.2 Components (including engines and equipment) that have been overhauled or maintained in accordance with paragraph 8.1, or 8.2, after 1 January 1995, will require assessment and release to service by an appropriately approved (i.e. Group B or C Rated) JAR-145 organisation prior to the aircraft to which these components are fitted, being used for the purposes of Commercial Air Transport.

NOTE: (1) Operators of aircraft that may transfer between CAT and non-CAT operations must ensure that all aircraft and component maintenance is released by an appropriately approved JAR-145
organisation, or accept the need for assessment and re-certification as necessary before commercial operations are commenced.

8 MAINTENANCE OF COMPONENTS (INCLUDING ENGINES, PROPELLERS, APUS AND EQUIPMENT) – NON COMMERCIAL AIR TRANSPORT

8.1 Components (including engines and equipment) that are intended for fitment to aircraft not used for the purpose of Commercial Air Transport may continue to be released to service by organisations approved by the CAA for the purpose under BCARs or by appropriately licensed aircraft maintenance engineers.

8.2 Components that are intended for fitment to UK registered aircraft not used for the purpose of Commercial Air Transport, may continue to be released to service by organisations outside of the UK, (including the United States of America and Canada), provided that they are:
- the manufacturer of that component or aircraft, or
- under the control of the aircraft or engine or propeller Type Certificate holder or are authorised by the Type Certificate holder’s National Aviation Authority for the particular purpose, at the time that the component was released to service.

8.3 Components (including engines and equipment) that are intended for fitment to aircraft not used for Commercial Air Transport may be released to service by an organisation approved in accordance with JAR-145 for that aircraft or component.

8.4 When components are fitted to an aircraft with a Certificate of Airworthiness in any category, not used for Commercial Air Transport, and in accordance with paragraphs 8.1 or 8.2 above, the required records, (e.g. aircraft, engine log books) must be endorsed with the following:

‘This component has not been maintained in accordance with JAR-145 and as such, may not be fitted to an aircraft used for the purposes of Commercial Air Transport until/unless released to service by an appropriately approved JAR-145 organisation.’

8.5 Where it is intended to fit part used components which have been maintained in a state other than the UK, to an aircraft in accordance with this Airworthiness Notice, the component shall be accompanied by an appropriate export statement from the state of export (e.g. US FAA Form 8130-4 for class 1 components such as engines and propellers and US FAA Form 8130-3 for other components, including APUs) following maintenance in that state and prior to fitting to the UK Register aircraft.

9 BILATERAL AVIATION SAFETY AGREEMENT (BASA)

9.1 Agreements between JAA States and other (non-JAA) States are being arranged in accordance with JAA procedures. The UK has negotiated a BASA with the USA at a Government level and a series of implementation procedures are under development. Assessment of the equivalence of each other’s maintenance systems and the standards achieved thereby, are currently underway.

9.2 The CAA have signed a Technical Arrangement - Maintenance (TAM) document with Transport Canada (TCCA) which permits both parties to accept maintenance carried out by approved organisations in accordance with JAA Administrative and Guidance Material, Section 2, Part 2, Chapter 32.

10 CHARGES Full details of the charges associated with CAA approval are prescribed in the current Airworthiness Notice No. 25.

11 APPLICATION Enquiries regarding the grant of a JAR-145 approval or a CAA Maintenance Approval to National requirements should be made in writing to the Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex RH6 0YR, marked for the attention of the Applications and Certification Section. Further information will then be supplied, including an application form.
12 CANCELLATION  This notice cancels Airworthiness Notice No. 14 Issue 12, dated 16 March 2001, which should be destroyed.
CAA National Requirements – Authorisation

1 GENERAL

1.1 JAR 145.50(a) states that a Certificate of Release to Service (CRS) must be issued by appropriately authorised certifying staff when satisfied that all required maintenance has been completed. These authorisation processes varied according to the aircraft size and complexity and were largely based upon the qualification criteria previously reflected in BCAR Section L, BCAR A8-3, A8-13 and A8-18.

1.2 For aircraft listed in Paragraph 14 of Airworthiness Notice No. 10 the requirements to be followed were laid out in Supplements 1 and 2 to BCAR A8-13 and A8-18. These supplements were originally included in this Notice, having been revised to include additional provision for the line maintenance certifying mechanic role as well as further guidance on the definition of limited and simple tasks.

1.3 For all other aircraft, UK practice focused mainly upon the required certification being made by Type Rated maintenance engineers licensed under the provisions of BCAR Section L. There were limited provisions for the use of the personal approvals principles of BCAR A8-3 but these were withdrawn through this Notice in 1995.

2 THE EFFECT OF IMPLEMENTING JAR-66, CERTIFYING STAFF - MAINTENANCE

2.1 With the introduction of JAR-66 for aeroplanes and helicopters of 5700kg MTOM and above on 1 June 2001, all new certifying staff authorisations for these aircraft will need to be based upon the requisite licence categories defined in JAR-66, Categories A, B1, B2 or C as appropriate. The exception will be for those staff who qualify for ‘protected rights’ under the provisions of JAR 66.1 who may continue to be authorised. The CAA will no longer issue a Section L licence for such aircraft although in certain circumstances existing licence holders may have additional aircraft types added to those privileges.

2.2 For aircraft below 5700 kg the requirements for the qualification of certifying staff for authorisation after 1 June 2001 will remain BCAR Section L Type Rated licences. It should be noted that BCAR Section L has now been revised to take account of JAR-66 and applications for new licences, or extensions to add new licence categories, for aeroplanes and helicopters above 5700 kg MTOM will not be considered.

2.3 For airships of any weight, the requirements for the qualification of certifying staff after 1 June 2001 will remain the requirements of BCAR A8-18 which is based upon BCAR Section L LWTRs plus type training and authorisation. This will be reviewed in due course when JAA proposals for amendment of the requirements are known.

2.4 The CAA’s Personnel Licensing Department will advise on the appropriate requirements for training and licensing. Reference should be made in the first instance to their web site at www.srg.caa.co.uk.

3 ‘PROTECTED RIGHTS’

3.1 Under the provisions of JAR 66.1 persons who had held certification privileges prior to 1 June 2001 may be entitled to ‘protected rights’ and be eligible for the issue of certification authorisations without first having to satisfy the requirements of JAR-66. Such rights may be transferable to a JAR-66 Aircraft Maintenance Licence. For UK licence or authorisation holders this will be carried out according to a programme which will be administered by the CAA’s Personnel Licensing Department.

3.2 Holders of existing licences issued by the CAA or holders of certification authorisations issued by UK based and approved JAR-145 organisations prior to 1 June 2001 will be
eligible for the recognition of those certification privileges as ‘protected rights’. Such ‘protected rights’ may be extended under certain circumstances to include individuals undergoing a course of training.

**NOTE:** Employees of JAR-145 approved organisations approved by the CAA outside of the JAA member States will not normally be eligible for recognition of their certification privileges for the purposes of ‘protected rights’ other than the entitlement because of the BCAR Section L licence held.

3.3 Holders of existing licences or holders of certification authorisations issued under the auspices and control of another full member JAA-NAA prior to 1 June 2001 will also be eligible for the recognition of those certification privileges as ‘protected rights’. The responsibility for issuing a JAR-66 licence and identifying any restrictions upon transfer of these ‘protected rights’ rests with the original issuing JAA-NAA. The CAA will permit UK approved JAR-145 organisations to employ and authorise such persons on the basis of their ultimate entitlement under JAR 66.1 to a JAR-66 licence. On this basis, the organisation will be required to develop appropriate procedures and to establish for itself the extent of such ‘protected rights’ and whether the original issuing JAA-NAA will impose any restrictions on such a JAR-66 licence when issued.

3.4 ‘Protected Rights’ do not apply to licences or authorisations for aircraft below 5700 kg MTOM or to airships or component certifying staff since JAR-66 does not yet apply.

4 PILOT AUTHORISATIONS

4.1 Under the previous UK provisions flight crew members could be issued with certain limited authorisations to cater for the accomplishment and certification of some tasks or inspections. Such provision was previously contained in Supplement 3 to this Notice.

4.2 The JAA issued an amendment to JAR-145 in August 1999 which introduced into that rule the provision for flight crew authorisations. It should be noted that this amendment applied to all weights of aircraft and not solely to those which were affected by JAR-66. These however were much more restrictive than UK practice and the CAA permitted the continuation of flight crew authorisations under the Supplement 3 provisions until the situation regarding the scope of such authorisations could be clarified or resolved.

4.3 Following extensive discussion on the subject, the JAA issued Temporary Guidance Leaflet No.38 on 1 June 2001. This includes more appropriate provision for such authorisations. The CAA has issued an exemption to JAR-145 which allows organisations to use TGL 38 as the basis for qualifying flight crew to perform and certify for certain tasks. It should be noted that with effect from 1 June 2001 all flight crew authorisations should be reviewed and issued on this basis. This includes such authorisations being issued for a fixed period.

4.4 Existing flight crew authorisations issued under the provisions of Airworthiness Notice No.14 and the associated Supplement No.3 may remain for the present but should be aligned with TGL 38. All such existing authorisations should be reviewed and re-issued by 31 May 2002 at the latest.

4.5 It should be noted that whilst TGL 38 makes direct reference to holders of Airline Transport Pilot Licences, where the holder of a UK CAA issued Commercial Pilot Licence acts as pilot in command of an aircraft which is certificated for single pilot operation, the principles of TGL 38 may be applied.

5 CHANGES TO ORGANISATIONAL EXPOSITIONS AND PROCEDURES

5.1 As a result of previous issues of this Airworthiness Notice, JAR-145 approved organisations were required to review and revise their organisation exposition and approved procedures to take account of the introduction of JAR-66 and the related changes to authorisation and approval policy.

5.2 Organisations should however further review these procedures in accordance with the revised contents of this Airworthiness Notice, JAR-145 and of course JAR-66 and JAR-147.
JAR-145 Temporary Guidance Leaflets - CAA Implementation Policy

1 GENERAL

1.1 Temporary Guidance Leaflets (TGLs) are issued from time to time in accordance with JAA Administrative and Guidance Material Section Two: Maintenance Part Two: Procedures, Chapter 11. The purpose of TGLs is to provide the JAA with a means for quickly providing advice and to permit the trial adoption of material. Prior to issue, the TGLs are not subject to formal Notice of Proposed Amendment (NPA) procedure which would allow each Airworthiness Authority to comment on and possibly promote changes to these procedures, consequently TGLs are available for selective adoption by the authorities concerned.

1.2 The CAA considers the content of each TGL when issued and decides which are suitable for adoption in whole or in part. If the CAA believes that the adoption, without change, of a particular TGL is not appropriate (e.g. for UK legal reasons), then the CAA may choose not to implement the TGL until formal NPA procedures, including JAR implementation, have been completed.

2 CAA IMPLEMENTATION

2.1 The following table indicates the UK CAA implementation status of each of the current TGLs at the date of this notice: the TGL may be adopted in whole or in part and this is indicated in the fourth column headed: ‘Accepted/Not Accepted by the CAA’.

2.2 The CAA will review the content of each of the TGLs as they are revised or issued by the JAA, and consider the implications of implementation. Revisions to the listing may therefore take place from time to time. If the need arises for the CAA to provide notification between revision dates of this Airworthiness Notice 14, the CAA will consider the use of an alternative means for promulgating the information (e.g. by the issue of a letter to JAR-145 Approved Organisations).
### UK CAA IMPLEMENTATION OF JAR-145 TEMPORARY GUIDANCE LEAFLETS

<table>
<thead>
<tr>
<th>No</th>
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<tr>
<td>10</td>
<td>01/01/96</td>
<td>Issue 1 of JAA Form One or Equivalent for Aircraft Components in Storage Prior to JAR-145 and JAR-21 or Removed Serviceable from Aircraft</td>
<td>Accepted</td>
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<tr>
<td>11</td>
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<td>12</td>
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<td>13</td>
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<td>21</td>
<td>29/03/96</td>
<td>Combined JAA Form One and FAR Part 43 return to service for JAA/FAA customer</td>
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<td>22</td>
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<td>JAA Acceptance of American Repair Stations</td>
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<td>Accepted as interpreted by BCAR A/B 7-5 Supplement</td>
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<td>Experience requirements for adding a new category or subcategory to a JAR-66 licence</td>
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<td>35</td>
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<td>Authorisation of flight crew personnel to issue certificates of release to service for maintenance</td>
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</table>

**NOTE:** * The less restrictive variations permitted by SMP 20 and 21 are to be reviewed by the Authority, which may result in full adoption of TGL paragraph 5.6.
Acceptance of National Approvals (BCARs) – JAR-145 Sub-contracting

1 GENERAL

1.1 The UK CAA has proposed and had accepted by the JAA the following Equivalent Safety Case in accordance with JAR 145.95.

1.2 Approved Certificates issued by BCAR approved Organisations for Specialised Maintenance Services, i.e. BCAR A8-5, together with the procedures listed in paragraph 3 are an acceptable means of compliance with JAR 145.1 (c) & (e).

1.3 In order to comply with JAR 145.1 (c) & (e) for release to service of an aircraft component used in Commercial Air Transport, an organisation must meet one of the following criteria:

(a) An organisation is approved in accordance with JAR-145.

(b) An organisation is accepted in accordance with the JAR 145.10(c) alternative.

(c) An organisation is contracted to another appropriately approved JAR-145 organisation.

(d) An organisation is working under the quality system of an appropriately approved JAR-145 organisation (AMC 145.1), this arrangement is known as "sub-contracting".

2 INTRODUCTION

2.1 JAR 145.1(c) and (e), permit an organisation that is not appropriately approved in accordance with JAR-145, to carry out certain maintenance tasks whilst working under the quality system of an approved JAR-145 organisation, this is commonly referred to as sub-contracting.

2.2 JAR-145 organisations frequently need to sub-contract certain specialised maintenance tasks such as:- plating, heat treatment, plasma spray etc. without the need for the sub-contractor to be directly approved in accordance with JAR-145.

2.3 After 10 July 2000, sub-contract control procedures, should be in compliance with JAR-145 Approved Maintenance Organisations, Section 2, JAR 145.1, (AMC & IEM), Appendix 6.

2.4 The UK CAA has an established national approval system (BCAR sub-section A8 approvals) which approves organisations to certify that aeronautical materials and/or parts have been processed in accordance with acceptable standards including relevant CAA requirements. It has been decided that JAR-145 approved organisations may accept an Approved Certificate issued by a BCAR A8-5 process company, in lieu of full compliance with Appendix 6. The final release to service following reassembly or installation however must be in accordance with JAR-145.

2.5 When maintenance is carried out under a sub-contract control system it means that for the duration of such maintenance the JAR-145 approval has been temporarily extended to include the sub-contractor. A valid BCAR approval for a maintenance process would allow the JAR-145 approved organisation to accept a BCAR Approved Certificate without the need for an in-depth pre-audit of the sub-contractor and only requires the quality audit staff to ensure the JAR-145 requirements not addressed by BCARs are satisfied.

2.6 The JAR-145 approved organisation should have the necessary expertise and procedures to allow it to determine that the sub-contractor meets the necessary quality standards.
3 PROCEDURE FOR ACCEPTANCE OF BCAR A8-5 APPROVED CERTIFICATES

3.1 When sub-contracting work to a BCAR A8-5 Process company the JAR-145 organisation’s procedures must make the following provisions: -

(a) The pre-audit procedure should ensure that the sub-contracted company has a valid and appropriate BCAR approval.

(b) The JAR-145 approved organisation should ensure the sub-contractor providing the specialised service is listed in their Maintenance Organisation Exposition.

(c) Sub-contracted process work acceptance should be fully described in the JAR-145 approved organisation’s procedures including the acceptance of a BCAR Approved Certificate.

(d) The Certificate of Release to Service and the JAA Form One for the final release of the component will always be issued under the JAR-145 approved maintenance organisation approval reference.

(e) The sub-contract control procedure will need to ensure the BCAR approval remains valid and appropriate for the process required.

(f) The JAR-145 quality audit staff will need to audit their sub-contract control section and sample audit the sub-contractors when appropriate as part of the quality programme.

3.2 When listing a BCAR approved company as a sub-contractor the CAA approval reference must be included.
The Process For Acceptance Of Used Engines, Engine Modules, Auxiliary Power Units (APUs) And Propellers For Use On Aircraft Requiring a UK Certificate Of Airworthiness

1 INTRODUCTION

1.1 For the purposes of this Notice engines, engine modules, APUs, and propellers are hereafter referred to as Powerplants.

1.2 Article 9(7) of the Air Navigation Order 2000 states that a Certificate of Airworthiness shall cease to be in force if the aircraft is overhauled, repaired or modified otherwise than in a manner and with material of a type approved by the CAA.

Similarly, for non Commercial Air Transport, Article 12(7) (a) requires that a Certificate of Release to Service (CRS) be issued when an aircraft has been overhauled, repaired, modified or maintained in a manner and with material of a type approved by the CAA.

For Commercial Air Transport, JAR 145-50 (a) requires that a CRS be issued when all the required maintenance has been carried out by the JAR-145 approved maintenance organisation in accordance with a JAR 145-70 Maintenance Organisation Exposition.

1.3 For Powerplants obtained from sources not under the direct airworthiness control of the CAA, this Notice defines a procedure which owners/operators must follow in order to meet the requirements of Article 9(7) of the Air Navigation Order 2000 and either Article 12(7) (a) or JAR 145-50(a) as appropriate.

1.4 Instructions are also included regarding both pool and lease/loan/power-by-the-hour arrangements and the alignment of maintenance programmes.

2 GENERAL REQUIREMENTS

It must be established by the owner’s/operator’s JAR-145 maintenance organisation or an appropriately type rated CAA Licensed Aircraft Engineer, as appropriate, that:

(a) the Powerplant is of a type approved by the CAA.
(b) civil identification plates are fitted.
(c) log books or their equivalent, as appropriate, are issued.
(d) original or certified true copies of any relevant documents (e.g. confirming modification standard, test results, etc.) arising from construction or previous Hot Section Inspection (H.S.I.)/Refurbishment/Overhaul/Performance Restoration are provided with the CRS.
(e) the Powerplant is in compliance with all applicable Airworthiness Directives/Additional Airworthiness Directives of the State of Design and the CAA.

NOTE: In the case of a Pool Powerplant only the Airworthiness Directives of the State of Design are required as a minimum (see paragraph 8).

(f) any period of storage has been in accordance with the manufacturer’s recommendations and that the Powerplant has not become unserviceable due to operational abuse, damage or the removal of components.
(g) the hours and cycles accrued of any life limited parts are clearly defined.
(h) all modifications and repairs embodied in the Powerplant have been approved by the Type Certificating Authority of the Powerplant or the CAA.

3 ALIGNMENT OF MAINTENANCE PROGRAMMES

Powerplant types which, in the UK operator’s maintenance programme are subject to fixed H.S.I/Refurbishment/Overhaul/Performance Restoration intervals, must have the time remaining to these intervals agreed by the CAA when the previous operator’s maintenance programme does not specify the same shop visit requirements or intervals.

4 POWERPLANTS WITH A JAA, FAA OR TRANSPORT CANADA AUTHORISED RELEASE DOCUMENT

4.1 Powerplants which meet the requirements of Paragraph 2 of the Notice and have not been operated since the last H.S.I/Refurbishment/Overhaul/Performance Restoration are acceptable for use if received with an Authorised Release Document as defined in (a), (b) or (c):

(a) a JAA Form 1 issued by a JAR-145 Maintenance Organisation listed in the JAA publication ‘JAR-145 Listed Organisations’.

(b) a FAA Form 8130-3 from a JAA accepted FAA Approved FAR-145 Repair Station listed in the JAA publication ‘JAR-145 Listed Organisations’.

(c) a Transport Canada Form 24-0078 from a JAA accepted Transport Canada Approved AM573 Maintenance Organisation listed in the JAA publication ‘JAR-145 Listed Organisations’.

4.2 If the Powerplant satisfies all of the requirements of paragraphs 2 and 4.1 of the Notice, then the following statement, signed by the person issuing the CRS must be entered into the appropriate log book:

‘Part........... S/N............ has been accepted under procedures complying with Airworthiness Notice No. 16, paragraphs 2 and 4.’

5 POWERPLANTS OPERATED UNDER THE AIRWORTHINESS CONTROL OF THE JAA, FAA OR TRANSPORT CANADA SINCE LAST H.S.I./REFURBISHMENT/OVERHAUL/PERFORMANCE RESTORATION

5.1 Powerplants which meet the requirements of paragraph 2 and the Authorised Release Document requirements of paragraph 4 of the Notice, but which have been operated since last H.S.I./Refurbishment/Overhaul/Performance Restoration, will be acceptable for use provided that:

(a) a serviceability statement is obtained from the previous operator declaring any restrictions in hours or cycles relating to inspection, lubrication, replacement or overhaul as necessary to maintain the airworthiness of the Powerplant.

(b) all defects have been rectified, or recorded,

(c) the Powerplant has been maintained to a JAA, FAA or Transport Canada approved maintenance programme.

5.2 If the Powerplant satisfies all of the requirements in paragraphs 2 and 5.1 of the Notice, then the following statement, signed by the person issuing the CRS, must be entered into the appropriate log book:

‘Part............. S/N.............. has been accepted under procedures complying with Airworthiness Notice No. 16, paragraphs 2 and 5.’

6 POWERPLANTS FROM OTHER SOURCES OR THOSE REQUIRING FURTHER SUBSTANTIATION

6.1 This paragraph applies when any of the following circumstances exist:

(a) it is not possible to satisfactorily confirm the origin, traceability or serviceability of the Powerplant.
(b) the Powerplant is obtained without a JAA, FAA or Transport Canada Authorised Release Document (as described in paragraph 4 of the Notice).

(c) the Powerplant has not been under the airworthiness control of the JAA, FAA or Transport Canada operator since the last H.S.I./Refurbishment/Overhaul/Performance Restoration.

(d) the Powerplant does not meet all of the requirements of Section 2.

NOTE: Owners and operators are advised to review the requirements of paragraphs 6.2 and 6.4 of the Notice prior to entering into a commercial agreement to purchase a Powerplant.

6.2 The owner’s or operator’s JAR-145 maintenance organisation or an appropriately type rated CAA Licensed Aircraft Engineer, as appropriate, must demonstrate to the satisfaction of the CAA the Powerplant’s acceptability, taking into account the following:

(a) the details of any un-approved modifications and repairs which have been embodied in the Powerplant.

(b) confirmation that military Powerplants which are similar to a civil equivalent have been modified to comply with civil requirements in conjunction with the manufacturer in each particular case, unless agreed otherwise with the CAA.

(c) confirmation that the last H.S.I./Refurbishment/Overhaul/Performance Restoration was undertaken to a specification, and by an organisation or person, acceptable to the CAA.

(d) a statement certifying serviceability (i.e. an Authorised Release Document or equivalent), issued by either the last H.S.I./Refurbishment/Overhaul/Performance Restoration organisation or the previous operator’s maintenance organisation, as appropriate. This organisation must be appropriately authorised by its national airworthiness authority to make such a statement. Alternatively, a statement certifying serviceability issued by the appropriate national airworthiness authority may be acceptable.

6.3 If the CAA accepts the Powerplant, the following statement, signed by a CAA Surveyor, must be entered into the appropriate log book:

‘Part........ S/N........... has been accepted by the CAA in accordance with Airworthiness Notice No. 16, paragraphs 2 and 6.2.’

6.4 If the serviceability cannot be adequately established then the Powerplant must be dismantled and inspected.

A suitably approved JAR-145 Maintenance Organisation or an appropriately type rated CAA Licensed Aircraft Engineer, must dismantle and inspect the Powerplant. The manufacturer’s recommendations must be used as the basis of the workscope for this activity, which must be sufficient to determine if either of the declarations below can be made. Rectification action must be taken where necessary.

If it cannot be established that the records are accurate and complete, all life limited parts must be scrapped. In addition, the applicant must make reference to the CAA for a decision on whether any other parts should be scrapped in the absence of satisfactory records.

6.5 If serviceability is established one of the following statements, signed by the JAR-145 Maintenance Organisation or the appropriately type rated CAA Licensed Aircraft Engineer, as applicable, must be entered into the appropriate log book, either:

‘Part........ S/N........... has been examined in accordance with Airworthiness Notice No. 16 paragraph 6.4, and no evidence of operational abuse, inadequate maintenance or unsuitable storage has been revealed.’

or

‘Part........ S/N........... has been examined in accordance with Airworthiness Notice No. 16 paragraph 6.4, and appropriate action has been taken to restore serviceability.’
7 LEASE/LOAN/POWER-BY-THE-HOUR POWERPLANTS
7.1 When a Powerplant is obtained on a long-term lease, loan or power-by-the-hour arrangement from a supplier who is either (a) the original manufacturer, or (b) a JAA, FAA or Transport Canada approved maintenance organisation or repair station defined in paragraph 4 of the Notice, then the operator must confirm that:
(a) the Powerplant complies with the requirements of paragraph 2
(b) the supplier has issued a serviceability statement declaring any restrictions in hours or cycles relating to inspection, lubrication, replacement or overhaul as necessary to maintain the airworthiness of the Powerplant.
(c) the Powerplant has been maintained to either the manufacturer’s maintenance programme, or a JAA, FAA or Transport Canada approved maintenance programme.
(d) all defects have been rectified or recorded.
7.2 The following statement, signed by the person issuing the CRS for the Powerplant, must be entered into the appropriate log book:
‘Part.......... S/N............ has been accepted under procedures complying with Airworthiness Notice No. 16, paragraph 7.’

8 POOL POWERPLANT
8.1 A ‘Pool’ Powerplant, interchanged between certain participating airlines on a temporary basis (limited to a maximum of 200 hours), is permitted provided:
(a) the conditions relating to airworthiness which apply to the pooling agreement are laid down in advance by the operator, agreed by CAA and lodged permanently in the operator’s Maintenance Management Exposition. These conditions require consideration of not only the history of the Powerplant but also the acceptability of the source of the H.S.I./Refurbishment/Repair/Overhaul/Performance Restoration where this is other than by the pool partner.
(b) the Powerplant is in compliance with all applicable Airworthiness Directives of the State of Design.
(c) the UK operator obtains from the previous operator a signed statement certifying the Powerplant is airworthy when released on loan, declaring any restrictions in cycles or hours, etc., relating to inspection, lubrication, replacement, or overhaul as necessary to maintain the airworthiness of the Powerplant during the period of loan.
8.2 The following statement, signed by the person issuing the CRS for the Powerplant, must be entered into the appropriate log book:
‘Part........ S/N............. has been accepted under procedures complying with Airworthiness Notice No. 16, paragraph 8.’

9 CANCELLATION
This Notice cancels Airworthiness Notice No. 16, Issue 11, dated 23 October 2000, which should be destroyed.
The Acceptance of New Aircraft Components

1 PURPOSE The purpose of this Airworthiness Notice is to provide guidance on the acceptance of new aircraft components to persons issuing the Certificate of Release to Service for the installation of components, or for organisations sourcing such components, for incorporation into parts or assemblies for release under a production organisation approval, so that responsibilities under the Air Navigation Order (ANO), JAR-145, JAR-21 and BCAR A8 may be satisfied in a manner acceptable to the CAA.

2 APPLICABILITY This Notice is applicable to new components intended for installation in aircraft issued with a UK Certificate of Airworthiness or incorporation into parts or assemblies against a UK production organisation approval under BCAR A8 or JAR21G. Information relating to the acceptance of used components is contained in JAR-145 and Airworthiness Notice No. 14.

2.1 A component received in accordance with this Notice should also have its eligibility for an individual aircraft established by the end user, considering applicable UK Additional Requirements and Special Conditions, Aircraft Technical Publications etc.

3 DEFINITIONS For the purpose of this Airworthiness Notice the following definitions apply:

(a) Aircraft Component means any new part of an aircraft including a complete powerplant and any operational or emergency equipment.

(b) Standard Parts A part is considered as a standard part where it is designated as such by the design approval holder (DAH) responsible for the product, part or appliance in which the part is intended to be used.

In order to be considered a standard part, all design, manufacturing, inspection data and marking requirements necessary to demonstrate conformance of that part must be in the public domain and published as part of a national or international specification.

NOTE: Parts which are the subject of specific product or equipment approvals such as technical standard orders (TSO), joint technical standard orders (JTSO) or joint parts approval (JPA) are not considered as standard parts.

When designating a standard part, the DAH holder should ensure that the effect on the design of any manufacturing tolerances within the specification are fully taken into account in the intended application. If it is found necessary to apply additional qualification or selection criteria over and above the published specification in order to satisfy the intended design requirements (such as enhanced levels of inspection, burn-in, or environmental tests etc.) then the DAH should allocate its own part number reference and such parts cannot be considered as standard parts.
(c) **Critical** means a part for which the failure analysis shows that hazardous effects, or worse, are not to occur at a rate in excess of extremely remote. This can also include parts for which a replacement time, inspection interval, or related procedure is specified in the Airworthiness Limitations section of the manufacturer’s maintenance manual or Instructions for Continued Airworthiness.

4 **AUTHORISED RELEASE DOCUMENT** This document is required for any aircraft component which is to be installed in an aircraft, except that it is not required for standard parts as defined in paragraph 3(b).

4.1 When received from a manufacturing source approved to JAR-21 (refer www.jaa.nl/certification/jar-21_poa.html), the Authorised Release Document will be a JAA Form One issued under the terms of that Approval.

4.2 When received from a manufacturing source approved by the CAA to BCAR A8-1 or A8-2 or approved by the NAA of one of the following countries, other than those issued against JAR 21G, the Authorised Release Document will be a JAA Form One issued under the terms of that Approval with the following statement in Block 13: “This certificate has been issued under ...(reference to the issuing NAA national rules applicable)”.

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<td>Austria</td>
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**NOTE:** Prior to January 1991 the JAA Form One was not generally available, therefore components released before this date, from one of the above sources, are acceptable on the Authorised Release Documents in use at that time, subject to compliance with JAR-145 Administrative and Guidance Material, Section 2: Maintenance Part Three: Temporary Guidance Leaflet 10, where applicable.

4.3 When received from a company Approved by the CAA to BCAR Chapters A8-4, Material Manufacturer, A8-5 Process Company; A8-6, Test House; A8-7 Material Distributor; or A8-16, Fastener Distributor, the Authorised Release Document will be an Approved Certificate issued under the terms of that Approval.

**NOTE:** See Airworthiness Notice No. 34 for further information relating to the receipt of raw material from France.

4.4 When received from a manufacturing source appropriately Approved by the Federal Aviation Administration (FAA), which arranges for the release of the aircraft component, the Authorised Release Document will be either:

- FAA Form 8130-4, Export Certificate of Airworthiness for new engines/propellers, or
- FAA Form 8130-3, Authorised Release Certificate/Airworthiness Approval Tag for all other new components including APUs.

Further information regarding the use of FAA Form 8130-3 is contained in FAA Order 8130.21C. As a result of the Common Release Certificate project between the JAA, FAA and Transport Canada, it has been accepted that inclusion of the word “Export” is not necessary on each authority’s respective forms. Inclusion of the word “Export” in Block 13 of a Form 8130-3 remains as an option to meet any existing bilateral agreement commitments.

Where a Form 8130-3 has been raised under previous revisions of the FAA Order then an export statement is still required. The current issue of the Form may be recognised by its revision - Form 8130-3 (6-01).
Forms 8130-3 issued for Domestic purposes only within the US or certifying conformity to the Export requirements of a specific country other than the UK are not acceptable.

4.5 The CAA position regarding FAA-PMA parts is that a company can accept all non-critical PMA components and all PMA ‘licence’ components (i.e. with the permission of the Design Holder to make the part) using an appropriate FAA 8130-3 release and without further conditions being imposed. Other critical PMA components may be accepted with an appropriate Form 8130-3 release, providing that they are for fitment to an aircraft, engine or propeller where the FAA is the authority of the State of Design, or with prior authorisation from the CAA, where the PMA component is manufactured with the permission of the TC/STC holder.

4.6 When received from a manufacturing source located outside of the JAA, and where a JAR-21 Subpart N arrangement has been established, the Authorised Release Document will be that used by the National Aviation Authority with which the Subpart N arrangement has been reached. Information on which Subpart N arrangements are in effect may be obtained from Central JAA or via the CAA.

4.7 Some aircraft components may be manufactured by organisations that do not fall within the foregoing group classifications. Where the organisation is the original manufacturer the CAA may be prepared to permit acceptance of such aircraft components without the foregoing release documentation, subject to the organisation being under the control of the aircraft, engine or propeller Type Certificate holder and authorised by the Primary National Aviation Authority for that particular purpose at the time that the component was manufactured.

5 DISTRIBUTORS (Except as stated in paragraph 4.3) Although aircraft component distributors provide a useful service to the aviation industry they are not required to be approved by the CAA, cannot raise Authorised Release Documents and cannot be required to possess the necessary technical expertise to establish the status of aircraft components. It therefore follows that for all components received, the end user should request from the distributor the associated Authorised Release Document raised by an appropriately approved organisation as described above.

Where a distributor does not want to pass the component’s documents to a potential buyer, being another distributor, it is acceptable for the original distributor’s documentation to be endorsed:

‘Authorised Release Documentation of the aircraft component is on file, Ref. No. # # # # and will be made available to the end user upon request from that end user.’

Upon request of the end user the distributor should transmit the original documentation to allow the end user to establish the components acceptability prior to installation. In all cases it is the responsibility of the end user to obtain the appropriate Authorised Release Documentation and establish the acceptability of the component.

NOTE: Where more than one component appears on the Authorised Release Document and the components are to be distributed separately a certified true copy of the Authorised Release Document is acceptable for transmittal to the end user. It should be made clear which entries on the copy of the Authorised Release Document relate to the supplied components.

6 CANCELLATION

This Notice cancels Airworthiness Notice No. 17, Issue 5, dated 29 October 2001 which should be destroyed.
Acceptance Standards for Imported Aircraft for which a UK Certificate of Airworthiness is Sought

1 INTRODUCTION
This Airworthiness Notice has been revised to advise of the implementation of changes that have been made to the requirements for BCAR A8-8, Group E3 Approvals.

2 REQUIREMENTS
2.1 BCAR Sections A and B, Sub-sections A3-2 and B3-2, specify the requirements for the issue of Certificates of Airworthiness. These sub-sections have been revised for aircraft with a maximum take off weight above 15 000 kg to require a report to be submitted by an appropriate design organisation, certifying that the airworthiness standard of the aircraft conforms to, or differs in a defined manner from, a standard approved by the CAA for the issue of a Certificate of Airworthiness for that type. For the purposes of this Notice, an appropriate design organisation is an organisation approved in accordance with BCAR A8-8 Group E3 or it may be the Type Certificate holder if considered acceptable.

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.

2.2 For other aircraft with a maximum take off weight below 15 000 kg, a suitably approved maintenance organisation, or, subject to CAA agreement, appropriately licensed aircraft maintenance engineers for aircraft types not listed in paragraph 14 of Airworthiness Notice No. 10 may be used. However, the use of the services of an E3 approved organisation is recommended, particularly where the work to establish compliance is significant.

2.3 BCAR Section A, Sub-section A8 details the various organisation approvals. The requirements for design organisation approvals under Sub-section A8-8 have been amended to enable an E3 Design Organisation to provide reports and to certify that a particular aircraft conforms to, or differs in a defined manner from, a standard approved by the CAA for the issue of a Certificate of Airworthiness for that aircraft type. Previously the E3 approval was limited to the provision of reports and certification of compliance with design standards only. The amendment addresses all of the airworthiness standards associated with issue of a Certificate of Airworthiness and applicable operational requirements. Consequently an E3 Design Organisation will now be required to have suitable procedures and arrangements for the inspection of aircraft to establish compliance with the documented airworthiness standard.

2.4 The revised BCAR Chapter A8-8 requirement contains an appendix that gives guidance on the format and content of the report to be provided by the E3 Design Organisation.

3 IMPLEMENTATION
In order to phase in the implementation of the new E3 approval, reports from organisations whose E3 approval is currently limited to establishing design standards will continue to be accepted until one year after the date of the publication of amended requirements. After this date the CAA will not accept reports to certify the airworthiness standard for aircraft
with a certificated maximum take-off weight above 15 000 kg, other than in accordance with the amended BCAR Chapter A8-8 requirement.

4 CANCELLATION  This Notice cancels Airworthiness Notice No. 18, Issue 7, dated 7 November 1997, which should be destroyed.
The Problem Of Bogus Parts

1 The CAA is becoming increasingly concerned about the quantity and variety of unapproved parts which are finding their way on to UK registered aircraft, in particular helicopters. Evidence indicates that these counterfeit and/ or fraudulently identified parts are being imported, largely from North America, however the CAA also has evidence of such bogus parts originating from the UK and also other foreign sources.

1.1 Manufacturing and/or marketing bogus parts is not endemic to the United Kingdom but evidence of the falsification of release documentation (JAA Form One) has been observed.

1.2 Installing bogus parts onto aircraft has serious airworthiness implications; to illustrate just how serious, the following two examples are quoted involving aircraft which are available in the international market place:

(a) A helicopter main rotor blade complete with release documentation was traced as having been scrapped by the manufacturer during the manufacturing process.

(b) An engine mount described as fitted new to an aircraft in 1979 was traced as having been factory installed in 1966.

2 UNAPPROVED PART

For the purpose of this Notice an Unapproved part is a part or material intended for installation on a type certificated product/aircraft, which has been neither manufactured according to approved procedures, nor conforms to an approved type design; or it fails to conform to declared specifications or accepted industry standards (i.e. standard parts).

2.1 Unapproved parts include, but are not limited to:

(a) Parts specified in the illustrated parts catalogues (IPC) of a type certificated aircraft, but which have been manufactured, reclaimed or reworked and then marked by an unauthorised source and provided with documents which indicate falsely that the part(s) are genuine and conform to the approved type design, or meet a particular industry standard and are offered for use as conforming with an aircraft manufacturers authorised IPC.

(b) Parts shipped directly to users by, manufacturers, suppliers, or distributors who do not themselves hold appropriate production approvals for the parts, and have not been authorised to make direct shipments to users or stockists, by the type certificate holder, who alone has production approval e.g. production overruns. This is a particular phenomena in the United States.

(c) Parts which have not been maintained, overhauled or repaired in accordance with the requirements of approved airworthiness data and/ or statutory requirements, or that have been maintained, overhauled or repaired by persons not authorised to perform and certify these functions.

3 PARTS ORIGINATING FROM THE SURPLUS UNITED STATES MILITARY STOCK

3.1 The United States Department of Defence (DOD) has a programme called ‘BREAKOUT’. Under this programme the DOD use manufacturers’ approved drawings, obtained under
the terms of production contracts with the original equipment manufacturer and seek bids from anyone who wishes to make the parts.

3.2 The suppliers of the BREAKOUT parts may not have the stringent quality controls that are required by the aircraft/component type certificate holder to satisfy FAA requirements. For example, periodic conformity inspections and destructive tests to assure the continued quality of the product may not have been undertaken.

3.3 The US government may also substitute military specifications in lieu of originally approved material and process specifications, thereby developing parts that do not conform to the FAA approved civil type design.

4 FAA SUSPECT UNAPPROVED PARTS NOTIFICATIONS

4.1 The FAA and CAA have intensified efforts to educate the public regarding the potential safety threat posed by aeronautical parts that do not meet applicable design, manufacturing or maintenance requirements. To achieve this, the FAA established a Suspect Unapproved Parts programme (Sups) and issued guidance in an Advisory Circular 21-29B.

4.2 Suspect Unapproved Parts Notifications can be found on FAA Internet site: http://www.faa.gov/avr/sups.htm

4.3 The CAA will distribute this information to approved maintenance organisations in the UK and overseas and to UK AOC holders.

5 Because of the increased activity being undertaken in the United States against suspect unapproved parts, it is likely that the vendors of these parts will direct their activities towards Europe and other parts of the world, because of the reduced risk of detection.

6 MANDATORY OCCURRENCE REPORTING PROCEDURES

6.1 Users of aircraft components and spares are reminded that suspected unapproved parts should be reported to the CAA through the Mandatory Occurrence Reporting procedures (MOR).

6.2 Although the MOR procedure does not extend to piston engined aircraft used for Aerial Work or privately operated, and any aircraft with a permit to fly, users of aircraft parts or material for this class of aircraft are encouraged to use the procedure where suspect parts are identified.

6.3 On receipt of an MOR, and where appropriate, the CAA will pass the details to the FAA through the Manager of the FAA International Field Office at Heathrow. In addition to assisting the FAA, who are implementing a vigorous campaign against unapproved parts, this procedure will enable the CAA to establish the dimensions of the problem as it affects the United Kingdom.

6.4 To assist in tracing unapproved parts or material, persons raising an MOR should, as far as possible, provide the following information on their report:

(a) The name of the suspected unapproved part.
(b) Part number, or any other number on the part.
(c) Serial number of part.
(d) List next higher assembly that suspected unapproved part is assembled into (i.e. fuel pump, engine, landing gear) and list part number, if known.
(e) Quantity of suspected unapproved parts found or identified.
(f) Make and model number of the aircraft or component that the suspected unapproved part is applicable to.
(g) The identification of the commercial source of the suspected unapproved part. If the part is identified with Part Manufacturer or Distributor marking, this should be quoted.
(h) Describe any pertinent facts relating to the suspected unapproved part and identify where part may be inspected (provide photos, invoices, etc., if available).
(i) The date suspected unapproved part was discovered.
(j) Name and address in full or the location where suspected unapproved part(s) was dis-
covered.

Foreign aircraft and approved component manufacturers can be contacted by users through their UK agent or direct, for verification that specific serial numbered items pur-
ported to be manufactured by them are in fact recorded in their archives. As an example, this process was used to verify that a particular helicopter main rotor head was in fact bo-
gus.

8 THE CERTIFYING PERSON AND USER RESPONSIBILITY

8.1 The Certifying Person (User) can be either the Approved Organisation, a person authorised in accordance with that organisation’s Exposition, or an appropriately CAA Type Rated Licensed Engineer, who issues the Certificate of Release to Service for installation of an aircraft part into an aircraft, its engine(s), propeller(s) or equipment.

8.2 The User of an aircraft part is responsible for ensuring that the part is serviceable and conforms to the standard determined by the appropriate type certificate holder as being suitable for the intended application. In order to discharge this responsibility to the satisfaction of the CAA/JAA, the user must, when obtaining an aeronautical part from a supplier:

(a) Ensure that the purchase order contains accurate definition of the aircraft parts and full details of the quality control and certification requirements to be met by the sup-
plier in satisfying the order;

(b) Take all necessary steps to verify that the supplier is meeting the requirements of the purchase order. This may require the user visiting the suppliers facilities.

8.3 In order to contain the serious problem of unapproved parts, Commercial Air Transport Operators (Public Transport) and associated Maintenance organisations who are users of aircraft spares should ensure that their aircraft spares purchasing policy and procedures are unequivocally stated in their company expositions/engineering procedural documents. They should also ensure that any deviation from that policy must be approved by the quality manager in accordance with procedures acceptable to the CAA.

8.4 Other organisations and private owners who purchase aircraft parts or materials can only be advised to exercise extreme caution and remember they will have to convince the USER of the authenticity of such spares.

9 Airworthiness Notice Numbers 11, 16, 17, 18 and 97 provide advice on the acquisition of aircraft or material parts for aircraft with Certificates of Airworthiness.

10 CANCELLATION This Notice cancels Airworthiness Notice No. 19, Issue 11, dated 9 No-
vember 1992, which should be destroyed.
Cotton, Linen And Synthetic Fabric-Covered Aircraft

1 INTRODUCTION
This Notice No. 20 contains requirements in respect of the issue or renewal of Certificates of Airworthiness and Permits to Fly applicable to aircraft excluding Microlights, that have fabric covering. The fabric covering may be manufactured from natural materials such as linen or cotton, but also include other Aviation Approved fabrics produced from Polyester or Glass Fibre.

2 STRUCTURAL DAMAGE AND DETERIORATION
2.1 Removal of the fabric covering of some older types of aircraft has revealed cases of unsuspected structural damage and deterioration. It is therefore important that during routine inspections, any sign of distortion, slackness, wrinkling or discoloration of the covering material is investigated and the cause established.

2.2 The use of good maintenance practices, incorporation of adequate correctly placed drain holes, regular cleaning and storage of the aircraft in a dry hangar will retard deterioration. Damage will be reduced by using proper ground handling techniques and equipment. Planned periodic inspections of aircraft coverings, structural elements and their attachments are essential in preventing damage and deterioration from going unnoticed.

2.3 Following incidents such as heavy landings, high “g” loadings, ground loops and collisions, the aircraft must be inspected to detect any hidden damage or distortion. This may involve removal of the covering material or provision of access openings and may include inspections using NDT techniques. Experience has shown that structures can appear undamaged until manually loaded during a physical check. Wherever possible, the manufacturers inspection recommendations should be used. In the absence of specific guidance, refer to CAA CAP 562 Civil Aircraft Airworthiness Information and Procedures (CAAIP) and/or consult a specialist organisation.

2.4 Details of the incident, inspections/repairs carried out should always be entered in the aircraft log book.

3 FABRIC COVERINGS
3.1 Many factors can influence the life and condition of covering fabrics, such as, age, contamination, exposure to high humidity, ultra violet light, utilisation and type of operation for which the aircraft has been employed. The type of covering material used will also need to be ascertained as natural materials are much more susceptible to adverse climatic conditions than synthetic materials. However, the improved longevity of synthetic materials often means that internal structures are inspected much less frequently and deterioration can go undetected.

3.2 The airworthiness of covering fabrics should be assessed using a method acceptable to the CAA, these being detailed in the Manufacturer’s Airworthiness data or where appropriate CAAIP Leaflet 2-8.

NOTE: With suitable training and experience an engineer can usually assess the condition of fabric covering by its appearance, tension and reaction to thumb pressure. Failing this ability, a suitable type of fabric tester should be used. The tester and its method of operation are described in CAAIP Leaflet 2-8.
3.3 Cotton and linen fabrics may be replaced with synthetic materials providing they are of a type manufactured and approved for aeronautical use in their country of origin and acceptable to the aircraft manufacturer as an alternative covering material. Replacement materials must also be appropriate for the intended purpose having properties no less than the original fabric in terms of strength and durability. Application must be in accordance with the manufacturer’s procedures with control surfaces re-balanced to the original limits specified. Rib stringing and other materials must have a compatible life expectancy to the replacement covering.

**NOTE:** Care must be exercised when tautening synthetic fabric using the application of heat. Lightly built wooden structures covered with these materials can become distorted or crushed during the shrinking process. The application of non-tautening dope should be also considered in these cases.

4 **CERTIFICATION REQUIREMENTS**

4.1 **Certificates of Airworthiness**

4.1.1 Certificates of Airworthiness will only be issued and may only be recommended for renewal in respect of used aircraft if the requirements of paragraph 4.1.2 and 4.1.3 have been complied with.

4.1.2 Certified evidence must be produced to show that an internal inspection sufficient to establish continued structural integrity has been carried out within the period specified in the applicable Maintenance Schedule. The depth of the inspection must be relative to the age of the aircraft, inspection history, known usage, storage conditions/hangarage and the elapsed time since the last full inspection. This should be determined by the certifying person using data from the organisation responsible for Type Design, a maintenance programme agreed by the Authority and the guidance material contained in CAAIP and Airworthiness Notices. Access holes may have to be cut to facilitate inspections and these reinforced in accordance with the manufacturers requirements (refer to covering schedule).

4.1.3 Certification of the inspections and work carried out must be made by an appropriately Licensed Aircraft Maintenance Engineer, persons specifically Authorised for the purpose or personnel operating under the approval granted to a Maintenance Organisation. Log book entries must be made in sufficient detail to provide an accurate record indicating the extent of the access, inspections carried out, repairs and overhauls performed and any recovering required since the last structural inspection.

**NOTE:** Airworthiness Notice No. 3 describes the certification responsibilities of UK Licensed Aircraft Maintenance Engineers in relation to Articles 10 and 12 of the Air Navigation Order and JAR 145.50.

4.2 **Permits to Fly**

4.2.1 Permits to Fly will only be issued and may only be recommended for renewal in respect of used aircraft if the requirements of paragraph 4.2.2 have been complied with.

4.2.2 At initial issue or the first annual inspection (as applicable) after the 1st October 1999, all fabric covered aircraft must be internally inspected to establish and suitably record their structural integrity. The depth of the inspection must be relative to the age of the aircraft, inspection history, known usage, storage conditions/hangarage and the elapsed time since the last full inspection. This must be certified by persons specifically authorised by the CAA or an organisation approved by the Authority to issue a Flight Release Certificate in order to qualify for issue or renewal of the Permit to Fly. Thereafter, inspections must be performed at a frequency not exceeding 3 years. Access holes may have to be cut to facilitate inspections and these reinforced in accordance with the design requirements (refer to covering schedule).

4.2.3 Log book entries must be made in sufficient detail to provide an accurate record indicating the extent of the access, inspections carried out, repairs and overhauls performed and any re-covering required since the last structural inspection.
5 GUIDANCE

5.1 Guidance material relating to fabric covered aircraft may be found in a number of publications which include:
- CAAIP Leaflet 2-8 Fabric Covering
- CAAIP Leaflet 2-9 Doping
- CAAIP Leaflet 6-1 Inspection of Wooden Structures
- CAAIP Leaflet 6-2 Inspection of Metal Aircraft Structures
- CAAIP Leaflet 6-5 Rigging checks on Aircraft
- FAA AC 43.13 Acceptable Methods, Techniques and Practices

5.2 Attention is drawn to Airworthiness Notice No. 50 which refers to deterioration in wooden structures and in glued joints in aircraft, and British Civil Airworthiness Requirements (BCAR) A3-7 Issue and Renewal of Permits to Fly.

6 CANCELLATION

This Notice cancels Airworthiness Notice No. 20, Issue 7, dated 18 March 1999, which should be destroyed.
Overseas Aviation Authorities

1 The CAA is prepared to supply free of charge one copy of each of the following CAA publications to Aviation Authorities throughout the world:
   • Type Certificate Data Sheets (CAP 477)
   • British Civil Airworthiness Requirements (BCARs)

   **NOTE:** (1) For a list of current BCARs showing title and CAP No., please see Airworthiness Notice No. 6, Appendix 3.
   **NOTE:** (2) This offer does not include any Part of Joint Aviation Requirements (JAR) which the CAA adopts as its own Requirements. See Airworthiness Notice No. 6 for more details.

   CAP 455 - Airworthiness Notices are now available on the CAA web site at www.srg.caa.co.uk under the heading Publications.

2 Applications for copies of these publications should be addressed to Applications and Certification Section, Civil Aviation Authority, Aviation House, Gatwick Airport South, West Sussex RH6 0YR, United Kingdom (E-mail: ad.unit@srg.caa.co.uk; Fax no: +44 1293 573993), stating the exact method of address. Each publication requested can be despatched to a different address.

3 To meet the CAA’s responsibilities in accordance with ICAO Annex 8, Part II, Continuing Airworthiness Information is supplied as follows:
   (a) CAP 476 - Mandatory Aircraft Modifications and Inspections Summary, lists with their associated Airworthiness Directive numbers, modifications, inspections and service bulletins declared mandatory by the CAA for aircraft, engines, propellers and equipment of UK design, is issued to all ICAO Contracting States.
   (b) The appropriate volumes of Foreign Airworthiness Directives are issued to those ICAO Contracting States which have an aircraft designed in that State operating on the United Kingdom Register of Civil Aircraft, so that each State is informed of CAA Additional Airworthiness Directives applicable to their products.

   CAP 473 - Foreign Airworthiness Directives, Volumes I and II, lists CAA Additional Airworthiness Directives applicable to aircraft, engines, propellers and equipment of USA design.

   CAP 474 - Foreign Airworthiness Directives, Volume III, lists CAA Additional Airworthiness Directives applicable to aircraft, engines, propellers and equipment designed outside the USA.

4 Changes to address details for publications listed in paragraphs 1 or 3 should be addressed as in paragraph 2.

5 **CANCELLATION** This Notice cancels Airworthiness Notice No. 22, Issue 9, dated 18 March 1999, which should be destroyed.
Fuel Additives – Health Hazards

1 Fuel anti-icing additive is used in a wide range of the smaller jet-engined fixed wing aircraft and also in helicopters. The additive contains Ethylene Glycol Monomethyl Ether, which is an extremely toxic substance when inhaled or absorbed through the skin. The usual method of dispensing the additive into the fuel when gravity re-fuelling, is by means of portable aerosol type containers. The most widely used of these comes under the trade name of ‘Prist’.

2 Whenever using these containers of anti-icing additive, great care must be taken to avoid inhalation or splashing of the additive on to the skin. A long-sleeved garment should be worn to cover the arms, gloves should be worn and goggles used for eye protection. Any clothing contaminated by accidental splashing should be promptly removed and the skin washed with soap and water. If anti-icing additive inadvertently enters the eyes, they should be flushed with water and a doctor should be consulted.

3 Dispensers are available for underwing pressure re-fuelling systems and when using this method the personnel carrying out the re-fuelling should still wear gloves to prevent contamination by any small spillage from the re-fuelling couplings.

4 Further information on the general handling and storage of Prist or other anti-icing additive can be obtained from the appropriate fuel company.

5 The information and recommendations of this Notice are intended to prevent unnecessary hazard to aircraft servicing personnel; it should not be construed to be a complete statement of the provisions necessary to comply with the Health and Safety at Work Act, the responsibility for administration of which rests with the Health and Safety Executive.
UK Airworthiness Course

1 THE COURSE

The UK Airworthiness Course, organised by the CAA Safety Regulation Group, is designed to provide an overview of the processes and procedures used by the UK Civil Aviation Authority to ensure that individuals, manufacturers, operators and maintenance organisations comply with the relevant airworthiness regulations, and set this work in the international context established by ICAO and JAAs.

2 WHO SHOULD ATTEND?

This course is aimed at Aviation Authorities, Operators, Maintenance Organisations and Manufacturers.

3 COURSES FOR 2003

Courses planned for 2003 are as follows:

02 March – 21 March 2003
05 October – 24 October 2003

4 APPLICATION

Early application is recommended. Please submit the attached application form to secure your place.

5 PAYMENT

The fee for this fully residential three-week course is £4,130. Payment should be received no later than 6 weeks prior to commencement of the course. Should an application be withdrawn, our cancellation policy will apply. See our website for details www.caa.co.uk/srg/nts/training

6 CANCELLATION

This Notice cancels Airworthiness Notice No. 24, Issue 40, dated 29 October 2001, which should be destroyed.
TOPICS COVERED IN THIS COURSE:

**Foundation Topics**
- ICAO
- The Concept of Airworthiness
- Overview of the CAA
- Overview of the JAA

**Design and Production**
- Design Organisation Approval Process
- Certification of Large Aircraft
- Certification of Small Aircraft
- Rotorcraft
- Flight Test Procedures
- The Turbine Engine
- Propulsion Regulation
- Powerplant Installation
- Aircraft Equipment Approvals
- Installation Approval
- Structures
- Cabin Safety

**Continuing Airworthiness**
- Maintenance Programmes
- Reliability Programmes
- Airworthiness & Avionics
- Ageing Aircraft
- Ageing Aircraft Avionics
- In service engine maintenance
- Quality in Aircraft Maintenance
- Engineer Licensing

**Flight Operations & Maintenance**
- The Air Operators Certificate
- Aerial work & Corporate Aircraft
- JAR OPS Subpart M (AOC Maintenance)
- JAR 145 Approved Organisations
- Flight Manuals and MMEL
- ETOPS

**Human Factors and Safety Management**
- Current Issues and practices

**Interfaces**
- Accident and Occurrence Reporting
- Flight Data Recording Analysis
- Aircraft Accident Investigation
- Aerodrome Licensing

**The Future of Regulation**
- Europe – EASA and the residual responsibilities of NAA and JAA
- The FAA View of the World

The course enjoys the support of a wide range of British Industry including Manufacturers, Operators and Maintenance Organisations. Visits to relevant organisations are included in the programme. Lectures are also given in aviation related areas such as Air Law, Aviation Medicine and Air Accident Investigation.
CIVIL AVIATION AUTHORITY

55th UK AIRWORTHINESS COURSE
2 March – 21 March 2003

APPLICATION FORM A

The completed form should be returned to the Civil Aviation Authority, International Training Services, Aviation House, Gatwick Airport South, West Sussex RH6 0YR.

Tel. No: (01293) 573392 Telex: 878753
Facsimile: (01293) 573990
e-mail: beth.macdonald@srg.caa.co.uk

Name: ___________________________________________________________________________________
(FAMILY NAME) (FIRST NAME) (MIDDLE NAME)

Usual First Name: _________________________________________________________________________

Organisation: ____________________________________________________________________________

Address: _________________________________________________________________________________
_________________________________________________________________________________________
_________________________________________________________________________________________

Telex/Tel/Fax: ____________________________________________________________________________
e-mail: ___________________________________________________________________________________

Job Title: ________________________________________________________________________________

Application is made for a place on this course for the above person. On receipt of your invoice for £4130, we agree to forward this sum, made payable to the Civil Aviation Authority.

Invoice to be sent to:
_________________________________________________________________________________________
_________________________________________________________________________________________
_________________________________________________________________________________________

Signature of sponsor: ____________________________________________________________________
CIVIL AVIATION AUTHORITY

56th UK AIRWORTHINESS COURSE
5 October – 24 October 2003

APPLICATION FORM B

The completed form should be returned to the Civil Aviation Authority, International Training Services, Aviation House, Gatwick Airport South, West Sussex RH6 0YR.

Tel. No: (01293) 573392
Telex: 878753
Facsimile: (01293) 573990
e-mail: beth.macdonald@srg.caa.co.uk

Name: ___________________________________________________________________________________
(FAMILY NAME) (FIRST NAME) (MIDDLE NAME)

Usual First Name: _________________________________________________________________________

Organisation: ____________________________________________________________________________

Address: _________________________________________________________________________________
_________________________________________________________________________________________
_________________________________________________________________________________________
_________________________________________________________________________________________

Telex/Tel/Fax: __________________________________________________________________________

e-mail: _________________________________________________________________________________

Job Title: ________________________________________________________________________________

Application is made for a place on this course for the above person. On receipt of your invoice for £4130, we agree to forward this sum, made payable to the Civil Aviation Authority.

Invoice to be sent to:
_________________________________________________________________________________________
_________________________________________________________________________________________
_________________________________________________________________________________________
_________________________________________________________________________________________

Signature of sponsor: _____________________________________________________________________
Charges for the CAA’s Airworthiness, Noise and Engine Emissions Certification Functions and Licences for Aircraft Maintenance Engineers Functions

1 In its Official Record Series 5 the Civil Aviation Authority makes Schemes of Charges. These are made in accordance with Section 11 of the Civil Aviation Act 1982. New schemes are made each year and become effective 1 April of that year.

NOTE: Official Record Series 5 - CAA Schemes of Charges are available on the CAA website at www.caa.co.uk under the heading Publications. Paper copy is obtainable from Documedia Solutions Ltd, 37 Windsor Street, Cheltenham, Glos. GL52 2DG.

2 The purpose of this Notice is to draw attention to some of the significant features of the Schemes in relation to airworthiness matters and to explain matters of detail so as to facilitate its operation. For full details, reference should be made to the Scheme itself which constitutes the authoritative text.

3 Before consulting the Secretary of State, Department of the Environment, Transport and Regions, the CAA circulates its proposals for the amendment of the charges to interested parties, including holders of Air Operators’ Certificates and bodies representative of various aviation interests. The comments received are taken into account when making and varying a Scheme.

4 DETAILS OF CHARGES
4.1 Certificates of Airworthiness (C of A)
4.1.1 The term ‘prototype’, as defined in the Scheme, embraces not only a prototype in the normal sense, but also a modification of a prototype.
Expressed as £ per 500kg of the MTWA or part thereof.

<table>
<thead>
<tr>
<th>WEIGHT AND CLASS OF AIRCRAFT</th>
<th>MTWA not exceeding 2730kg</th>
<th>MTWA exceeding 2730kg but not exceeding 15,000kg</th>
<th>Exceeding 15,000kg and not operated pursuant to an AOC</th>
<th>Exceeding 15,000kg and operated pursuant to an AOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helicopters/Tilt rotor</td>
<td>417</td>
<td>417</td>
<td>417</td>
<td>417</td>
</tr>
<tr>
<td>Others</td>
<td>104</td>
<td>104</td>
<td>104</td>
<td>104</td>
</tr>
</tbody>
</table>

The cost of the investigation as determined by the CAA:

<table>
<thead>
<tr>
<th>PROTOTYPIC INVESTIGATION</th>
<th>Total</th>
<th>Min Charge</th>
<th>Charge per year of validity</th>
<th>Investigation Charge</th>
<th>Charge per year of validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td>417</td>
<td>135</td>
<td>417</td>
<td>135</td>
</tr>
<tr>
<td>Helicopters/Tilt rotor</td>
<td>417</td>
<td>104</td>
<td>67</td>
<td>417‡</td>
<td>67</td>
</tr>
<tr>
<td>Others</td>
<td>104</td>
<td>104</td>
<td>417‡</td>
<td>104‡</td>
<td>N/A</td>
</tr>
</tbody>
</table>

‡ Where the period of validity applied for in respect of the certificate equals three years, the validity element of the charge shall be reduced by 15%.

* The cost of the investigation for a prototype will be calculated using the hourly rate stated in paragraph 4.12 subject to a maximum quoted in the scheme.

For aircraft operated pursuant of an AOC, where the MTWA exceeds 15,000kg the CAA’s relevant costs are recovered through the AOC scheme of charges.
4.1.3 The charges to be paid on application for renewal of a C of A are as follows:

- **Glider**: £67 for each year of validity
- **Balloon**: for converting an expiring C of A into one for which a period of validity is not stated: £22

- **Aircraft other than Gliders or Balloons**:‡ Where the period of validity applied for in respect of the certificate equals three years, the validity element of the charge shall be reduced by 15%.

<table>
<thead>
<tr>
<th>WEIGHT AND CLASS OF AIRCRAFT</th>
<th>MTWA not exceeding 2730kg</th>
<th>MTWA exceeding 2730kg but not exceeding 15,000kg</th>
<th>MTWA exceeding 15,000kg and not operated pursuant to an AOC*</th>
<th>MTWA exceeding 15,000kg and operated pursuant to an AOC*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Helicopters/rotor</td>
<td>Helicopters/rotor</td>
<td>Helicopters/rotor</td>
<td>Helicopters/rotor</td>
</tr>
<tr>
<td>Gliders or Balloons</td>
<td>135</td>
<td>67</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Helicopters/rotor</td>
<td>104</td>
<td>67</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Others</td>
<td>417‡</td>
<td>NIA</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Others</td>
<td>104‡</td>
<td>NIA</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Others</td>
<td>417‡</td>
<td>NIA</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Exceeding 15,000kg and operated pursuant to an AOC:

- Helicopters/rotor: £2730 per year of validity
- Others: £417 per year of validity

‡ Where the aircraft is subject to Star Check report from a firm approved in BCAR Group M3, and the C of A is subject to a condition that the aircraft be maintained to a maintenance schedule.
4.1.4 Subject to sub-paragraph (a), upon making an application for a Certificate of Airworthiness in respect of an aircraft where a Certificate of Airworthiness has previously been issued and has ceased to be in force, the applicant shall pay a charge equivalent to the charge which would be due if that application were an application for the first issue of a Certificate of Airworthiness, except that the element of that charge which does not relate to validity shall be reduced by 50%.

(a) Where the aircraft has been modified while the Certificate of Airworthiness was not in force, the applicant shall pay a charge as if the aircraft were a series modified aircraft in accordance with sub-paragraph 2(4) (a) (ix) of the Scheme.

4.1.5 Where an application is made to change the category of a C of A to enable the aircraft to fly for an additional purpose, the applicant is to pay a charge of £277.

4.1.6 The applicant is required to pay in advance for the period of validity of a C of A. Should for any reason an aircraft be withdrawn from service and application made for its C of A to be revoked, the CAA may waive some of the charge having regard to the circumstances in each case. This applies to any current C of A provided that the unexpired period of validity at the time of application (for revocation) was at least 28 days. Usually any refund, which will be made to the person surrendering the C of A, will be proportional to the charge paid and to the proportion of the period of validity of the C of A which has not expired. For the purpose of evaluating this proportion the periods of validity will be taken as whole numbers of days.

NOTE: This paragraph is not applicable to Aircraft exceeding 15,000 kg and operated pursuant to an AOC.

4.1.7 Where an application is made for the grant or renewal of an exemption from article 8(1) of the ANO in respect of foreign registered aircraft the applicant is to pay a charge of £286 where the CAA deems it necessary to inspect the aircraft.

4.2 Aircraft Type Certificates Aircraft type certification is usually effected coincidentally with the first issue of a C of A in respect of the prototype. In such a case the design investigation is not duplicated, and the charge for the total investigation will be made under whichever of the two functions is appropriate. An application to the JAA shall be deemed to be an application to the CAA where the CAA is instructed to participate.

4.3 Permits to Fly

4.3.1 The charge to be paid for the grant of a Permit to Fly is as follows:

(a) MTWA not exceeding 500 kg: Investigation charge £129; Validity charge for each year of validity £129.

(b) MTWA exceeding 500 kg but not exceeding 2730 kg: Investigation charge £238; Validity charge for each year of validity £238.

(c) MTWA exceeding 2730 kg: Investigation charge £315; Validity charge for each year of validity £315.

This charge should be paid on application. If the cost of the investigation for the issue of a Permit calculated using the hourly rate of paragraph 4.12 exceeds the investigation charge in (a), (b) or (c) above, the CAA may make a further charge having regard to the cost of the investigation but subject to a maximum figure specified in the scheme.

4.3.2 The charge to be paid on application for the renewal of a Permit to Fly is as follows:

(a) MTWA not exceeding 500 kg: £129 for each year of validity.

(b) MTWA exceeding 500 kg but not exceeding 2730 kg: £238 for each year of validity.

(c) MTWA exceeding 2730 kg: £315 for each year of validity.

4.3.3 For aircraft where the Permit to Fly has ceased to be in force, charges equivalent to the grant of a Permit to Fly as noted in paragraph 4.3.1 apply.

4.4 C of A for Export The charges for the issue of a Certificate of Airworthiness for Export are specified in the Scheme. If the cost of the investigation exceeds the scale figure, the CAA...
may make a further charge to recover this cost, subject to the maximum specified in the Scheme.

The charges to be paid on application are:

<table>
<thead>
<tr>
<th>in the case of a:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Glider or balloon</td>
<td>£104.00</td>
<td></td>
</tr>
<tr>
<td>helicopter or powered</td>
<td>£170.00 per 500kg or</td>
<td>part thereof, of the</td>
</tr>
<tr>
<td>tilt rotor</td>
<td>part thereof</td>
<td>maximum weight</td>
</tr>
<tr>
<td>other</td>
<td>£104.00 per 500kg or</td>
<td>part thereof</td>
</tr>
<tr>
<td></td>
<td>part thereof</td>
<td>maximum weight</td>
</tr>
</tbody>
</table>

4.5 **Noise Type Certificates** Where an application is made for the issue or variation of a Noise Type Certificate the applicant shall pay for the cost of the investigation subject to a specified maximum. A Noise Type Certificate is a certificate issued under BCAR, Section N and is a prerequisite to the issue of a Noise Certificate to an aircraft in accordance with the Air Navigation (Noise Certification) Order 1990. The CAA makes no charge for the issue of Noise Certificates in respect of series aircraft. For microlight aeroplanes the charge for the noise type certification investigation for manufacturers and/or microlight aeroplane kit suppliers is as shown in paragraph 2(2) of the Scheme.

4.6 **Certificate of Engine Emissions** Where an application is made for a certification by the CAA, under the Aircraft and Aircraft Engine Emissions Order, that a type of aircraft, or type of engine, complies with the relevant requirements in the Order, the applicant shall pay for the cost of the investigation subject to a specified maximum.

4.7 **Approval of Aircraft Maintenance Schedules**

4.7.1 Upon making an application for the approval of an aircraft maintenance schedule alternative to the aircraft manufacturer’s recommended schedule, the applicant shall pay a charge of £596.

4.7.2 Upon making an application for the approval of an amendment to the technical content of a maintenance schedule or programme by an organisation not approved for such purposes, the applicant shall pay a charge of £477. Provided that where such an application is supported by the type certificate holder or an organisation holding a BCAR A7-5 approval or complies with the JAA Administrative and Guidance Material, Temporary Guidance Leaflet TGL 27, no charge shall be payable.

4.8 **Approval of Persons (Organisations)**

4.8.1 The scale of charges for the initial approval of an organisation for the purposes of any provision in Part III of the Air Navigation Order (other than Article 13) or for the purposes of JAR-21 or JAR-145, or for any variation of the terms of such an approval, is shown in Table 1.

4.8.2 The scale of charges in respect of the Investigation required by the CAA for the purposes of satisfying itself that one or more current approvals should remain in force for a period of 12 months commencing 1 April in any year, is shown in Table 2 and, if applicable, Table 3. The premium charge of Table 3 is only invoked when the number of man hours required by the CAA to oversee such an approval has exceeded 100 hours in EACH of the two years immediately prior to the year to which the charge relates. Any such charge is required to be paid on 1 April in that year.

4.8.3 The scheme also provides that the Annual Investigation Charge may be reduced where the holder is able to satisfy the CAA by 30 April 2003 that the value of the activity undertaken under the terms of the approval during the 12 months to 31 March 2002 does not exceed certain limits. The reduced charge and associated limits are included in the table.
The scheme provides a provision that where the cost of investigation exceeds the initial charge, further charges may be incurred subject to a specified maximum. See paragraph 4.12.

* Special circumstances means an application which is made in circumstances where the CAA considers that it has sufficient prior knowledge and experience of the applicant to be satisfied with the applicant’s competence.

‡ Provided that where the application is in respect of approval Groups M3, M5, E3 or E4 (one or more), the charge payable on application shall be reduced to £315.

Table 1: Initial/Variation of Approval

<table>
<thead>
<tr>
<th>BCAR chapter</th>
<th>Group Rating/Subpart</th>
<th>Initial/Application Fee #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A8-1</td>
<td>A1</td>
<td>£4920</td>
</tr>
<tr>
<td>A8-19</td>
<td>A3</td>
<td></td>
</tr>
<tr>
<td>JAR-21</td>
<td>Subpart G or J</td>
<td></td>
</tr>
<tr>
<td>JAR-145</td>
<td>Ratings A1 or B1</td>
<td></td>
</tr>
<tr>
<td>A8-2</td>
<td>A2</td>
<td>£2460</td>
</tr>
<tr>
<td>A8-4</td>
<td>B2</td>
<td></td>
</tr>
<tr>
<td>A8-8</td>
<td>E1</td>
<td></td>
</tr>
<tr>
<td>A8-8</td>
<td>E2</td>
<td></td>
</tr>
<tr>
<td>A8-3</td>
<td>B1</td>
<td>£1230</td>
</tr>
<tr>
<td>A8-9</td>
<td>F1</td>
<td></td>
</tr>
<tr>
<td>A8-9</td>
<td>G1</td>
<td></td>
</tr>
<tr>
<td>JAR-145</td>
<td>Ratings A2, A3, B2, B3, C or D</td>
<td></td>
</tr>
<tr>
<td>A8-8</td>
<td>E3</td>
<td>£687</td>
</tr>
<tr>
<td>A8-9</td>
<td>F3</td>
<td></td>
</tr>
<tr>
<td>A8-15</td>
<td>M3</td>
<td></td>
</tr>
<tr>
<td>A8-20</td>
<td>E4</td>
<td></td>
</tr>
<tr>
<td>A8-20</td>
<td>M5</td>
<td></td>
</tr>
<tr>
<td>A8-20</td>
<td>M5/E4 combined</td>
<td>£1230</td>
</tr>
<tr>
<td>Any other Approval (excluding A8-9 F4)</td>
<td></td>
<td>£1230</td>
</tr>
<tr>
<td>Major structural and/or managerial change</td>
<td>Cost of investigation subject to a specified maximum</td>
<td></td>
</tr>
<tr>
<td>Variation of terms of approval ‡</td>
<td>£615</td>
<td></td>
</tr>
<tr>
<td>Application in special circumstances‡</td>
<td>£615</td>
<td></td>
</tr>
<tr>
<td>Issue of revised documents where no investigation is deemed necessary</td>
<td>£48</td>
<td></td>
</tr>
</tbody>
</table>
1 BCAR approval rating F4 will be issued at no charge.

**NOTE:** Where a person (organisation) holds an approval in more than one of the four groups above, the holder of the approval shall pay:

(a) 100% of the total charge (including additional site charges) specified in respect of the group which attracts the highest main site charge, and

(b) 100% of the total charge (including additional site charge) specified in respect of each other group held, except that:

If the value of activities in respect of the second or subsequent group(s) does not exceed £800,000 the charge for the second or subsequent group(s) shall be 25% of the total charge (including additional site charge) specified in the Table.

### Table 2: Renewal of Approval (expressed as £)

<table>
<thead>
<tr>
<th>Approval Groups</th>
<th>Main Site charge according to the value of activities pursuant to the Approval</th>
<th>Additional Site Charge (per site)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>more than £1,600,000</td>
<td>£800,000 to £1,600,000</td>
</tr>
<tr>
<td>BCAR Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1, A3, or</td>
<td>4920</td>
<td>2460</td>
</tr>
<tr>
<td>A2, B2, E1, E2, or</td>
<td>2460</td>
<td>2460</td>
</tr>
<tr>
<td>B1, F1,G1 combined M5 &amp; E4 or</td>
<td>1230</td>
<td>1230</td>
</tr>
<tr>
<td>M3, M5, E3, E4 or</td>
<td>687</td>
<td>687</td>
</tr>
<tr>
<td>any other BCAR approval1</td>
<td>1230</td>
<td>1230</td>
</tr>
<tr>
<td>JAR-21 Sub-part G Group</td>
<td>4920</td>
<td>2460</td>
</tr>
<tr>
<td>JAR-21 Sub-part J Group</td>
<td>4920</td>
<td>2460</td>
</tr>
<tr>
<td>JAR-145 Group</td>
<td>A1, B1 Ratings or</td>
<td>4920</td>
</tr>
<tr>
<td></td>
<td>1230</td>
<td>1230</td>
</tr>
<tr>
<td></td>
<td>A2, A3, B2, B3, C or D Ratings</td>
<td>1230</td>
</tr>
</tbody>
</table>

1 BCAR approval rating F4 will be issued at no charge.

### Table 3: Premium Charge

<table>
<thead>
<tr>
<th>Number of Man-hours</th>
<th>Charge in £</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceeded 100 in each of the preceeding 2 years but did not exceed 200 in both years</td>
<td>5,330</td>
</tr>
<tr>
<td>Exceeded 200 in each of the preceeding 2 years but did not exceed 300 in both years</td>
<td>21,320</td>
</tr>
<tr>
<td>Exceeded 300 in each of the preceeding 2 years but did not exceed 400 in both years</td>
<td>37,310</td>
</tr>
<tr>
<td>Exceeded 400 in each of the preceeding 2 years but did not exceed 500 in both years</td>
<td>53,300</td>
</tr>
<tr>
<td>Exceeded 500 in each of the preceeding 2 years</td>
<td>69,290</td>
</tr>
</tbody>
</table>
4.8.4 For the purpose of the Scheme ‘value’ means the consideration paid in respect of the sale or disposal of any goods or the provision of any services where such goods or services are the subject of reports made under the terms of the approval, for example items released under the approval, but not including any Value Added Tax payable thereon, and not including the consideration paid in respect of the sale or disposal of any aircraft where there is in force in respect of that aircraft a UK Certificate of Airworthiness.

4.8.5 To be satisfied that the value of activities is such as to qualify for reduced charges, the CAA will require evidence in accordance with either (a) or (b) as follows:

(a) A statement, signed by the Chief Executive of the approved Organisation and by a qualified accountant, of the value of activities undertaken under the terms of the approval during the 12 months to 31 March 2002.

(b) Where the holder of the approval wishes the CAA to regard turnover as being equal to the value of activities, a statement of the turnover in the financial year which ended during the 12 months to 31 March 2002 obtained from the published accounts of the firm of which the approved Organisation is a part.

4.8.6 Where a person is accredited by the United Kingdom Accreditation Service, the charge will be reduced by 50% in respect of BCAR approvals.

4.9 Approval of Engines and Auxiliary Power Units Provision is made in the Scheme for making a charge for the investigation leading to the approval and variation of approval of an engine or auxiliary power unit. There is also provision for charging for investigating modifications to, and defects in, certificated engine types.

4.10 Approval of Aircraft Equipment (excluding Engines) and Modification, Repair of Such Equipment The charges for initial approval and modification of aircraft equipment (including radio apparatus but excluding engines and Auxiliary Power Units) are specified in the Scheme. Charges for both these functions consist of minimum amounts payable on application plus, when actual costs exceed such minimum amounts, invoices payable subsequently in respect of such excess costs but subject to the maximum figure specified. The minimum charge payable on application for approval of:

(a) Equipment primarily intended to be installed in aircraft not exceeding 2730 kg MTWA: £449,

(b) In the case of a JTSO authorisation: £649,

(c) Equipment primarily intended to be installed in other aircraft: £649,

(d) Modification of such equipment: £159.

4.11 Approval of Aircraft Modifications Repair (Excluding Engines and Auxiliary Power Units) The charges for approval of a modification, or repair, of an aircraft are specified in the Scheme. These charges comprise minimum amounts payable on application plus, when actual costs exceed such minimum payment, invoices payable subsequently in respect of the excess amount but subject to the maximum figure specified. An application to the JAA shall be deemed to be an application to the CAA where the CAA is instructed to participate. The minimum amount payable on application is:

(a) For the approval of a minor modification: £71,

(b) In the case of an aircraft not exceeding 2730 kg MTWA: £324,

(c) In the case of any other aircraft: £477.

NOTE: For the purposes of this paragraph, a minor modification shall be a modification which, in the opinion of the CAA, will not require an investigation exceeding one hour, and no charge shall be paid where the minor modification has been undertaken by an organisation holding an appropriate design approval.

4.12 Calculation of the Cost of Investigation Where a charge is based on the cost of the CAA investigation, it will be determined, as specified in the Scheme, by multiplying the appropriate hourly rate by the total number of man-hours spent only by certain technical staff on the technical work in question. Where the investigation relates to aircraft the MTWA of which does not exceed 2730 kg, or to equipment installed in or primarily
intended to be installed in such aircraft, the rate is £108/hr. Where the investigation relates to other aircraft, or to other equipment, the rate is £159/hr. These differential rates take account of the fact that the greater proportion of Safety Regulation Group indirect costs is relevant and, therefore, attributed to larger aircraft and their equipment. Where the investigations relate to the approval of persons, the rate is £159/hr.

4.13 **Airworthiness Functions Performed Outside the United Kingdom** Provision is made in the Scheme for the CAA to charge for the additional costs it may incur when, to perform a function, any of its staff has to travel outside the country where that person is normally stationed. This applies to both British and foreign applicants where the function is one specified in the Scheme.

4.14 **Information Relating to Occurrence Reports** Upon making an application for the CAA to make available to a person described in Regulation 9 of the Civil Aviation Authority Regulations 1991 information relating to reports of reportable occurrences, or a summary thereof, the applicant shall pay:

(a) For a single monthly Occurrence Digest £12.

(b) To receive one copy of each monthly Occurrence Digest for a period of 12 months, a charge of £121.

4.15 **Copies of Documents**

(a) The charges for a copy or replacement of a Flight Manual or Performance Schedule issued under the Air Navigation Order in respect of types for which the CAA has accepted type design responsibility are:

- In respect of an aircraft with an MTWA not exceeding 2730 kg – £141,
- In respect of an aircraft with an MTWA exceeding 2730 kg but not exceeding 5700 kg – £282,
- In respect of an aircraft with an MTWA exceeding 5700 kg – £423.

(b) The charge for a copy or replacement of a Permit to Fly, a C of A, a Certificate of Approval of a Person (Organisation), a Certificate of Approval for an Aircraft Radio Installation or a Noise Certificate – £37.

(c) In the case of a copy or replacement of any other document the charge is £17.

5 **LICENCES FOR AIRCRAFT MAINTENANCE ENGINEERS**

5.1 **BCAR Section L Licence**

Upon making an application in respect of a licence to act as an Aircraft Maintenance Engineer or for the inclusion of a type rating in such a licence in accordance with BCAR Section L, the applicant shall pay:

(a) For the grant of a licence to include a Without Type Rating sub-division, for each application, a charge of £176;

(b) For the extension of a licence to include a Without Type Rating sub-division, for each application, a charge of £82;

(c) For the inclusion of a type rating, a charge of £83;

(d) For the renewal of a Licence valid for 5 years, a charge of £205;

(e) For a copy or replacement of a licence or for a variation of a licence other than one for which a specific charge is specified in sub-paragraphs (a) to (d) above, a charge of £37;

(f) For the assessment or re-assessment of a qualification for the purpose of issuing a licence, a charge of £1150 or, if the cost of the assessment exceeds this amount, a charge of such amount as may be decided by the CAA having regard to the expenses incurred, subject to a maximum specified in the scheme.

**NOTE:** This charge applies to the assessment of qualifications such as particular academic course certificates (except certificates issued under JAR-147) to allow exemption from licence examinations requirements. It is not intended to apply to individuals being granted standard exemptions from examinations.
(g) For each attempt at an examination module or part module conducted by the CAA, a charge of £27;

(h) For an examination to be re-marked, a charge of £21, refundable if a pass is subsequently awarded as a consequence of an error made by the CAA;

(i) For the refund or transfer of fees or when an examination has been re-arranged at the request of the applicant, a charge of £21;

(j) For the issue of a duplicate or replacement examination result notification, a charge of £21.

5.2 JAR-66 Licence

(a) For the grant or extension of a basic licence granted under JAR-66, for each application, a charge of £205. Where an application for a Category C basic rating is supplied concurrently with Category B1 or B2 no further charge is payable;

(b) For the first granting of a JAR-66 licence issued on conversion from a BCAR Section L licence, including any type rating held on the latter licence, a charge of £205;

(c) For the first granting of a JAR-66 licence on the transfer of certification privileges granted in accordance with a company authorisation or approval scheme approved by the CAA where a BCAR Section L licence is not held, a charge of £205;

(d) For each attempt at an examination module or Part module conducted by the CAA a charge of £27.

(e) For inclusion of a type rating, a charge of £83. Where an application for a Category C Type rating is supplied concurrently with the same type rating within Category B1 or B2 no further charge is payable;

(f) Subject to sub-paragraph (e) for the inclusion of a type rating, a charge of £83. Where type ratings are included at the same time as a JAR-66 licence is first issued, either on conversion of a BCAR Section L licence or on the basis of transfer of certification privileges granted in accordance with a company authorisation or approval scheme, approved by the CAA, the maximum charge for all type ratings so included shall be £248.

(g) For the renewal of a licence valid for 5 years, a charge of £205;

(h) For a copy or replacement of a licence or for a variation of a licence other than one for which a specific charge is specified in sub-paragraphs (a) to (h) above, a charge of £37.

(i) For the assessment or re-assessment of a qualification for the purpose of issuing a licence, a charge of £1150 or, if the cost of the assessment exceeds this amount, a charge of such amount as may be decided by the CAA having regard to the expenses incurred, subject to a maximum specified in the scheme;

(j) For each application for the removal of one or more limitations a charge of £83.

5.3 Approval of a Course of Training or Instruction

(a) Upon making an application for approval in accordance with BCAR Section L, for the purposes of Article 13 of the Order, of a course of training or instruction, for the investigations required by the CAA, the applicant shall pay a charge of £1175.

(b) Upon making an application for authorisation in accordance with BCAR Section L, for the purposes of Article 13(6) (b) of the Order, of a person to conduct such examination or tests, where the examination or test is in respect of a candidate who has not completed a course approved under Article 13(6) (a) of the Order, the applicant shall pay a charge of £1175.

(c) In respect of the investigation required by the CAA for the purpose of satisfying itself that an approval referred to in sub-paragraph (a) or (b) above should remain in force for a period of twelve months commencing 1 April in that year, a charge of £1175.

(d) For a major organisational or managerial change the holder of the approval shall pay the cost of the investigation subject to a maximum specified in the scheme.
(e) Upon making an application for approval of a type rating course for the purpose of gaining a type rating in an engineer’s licence granted under BCAR Section L or JAR-66 where the course is not approved under JAR-147, the applicant shall pay a charge of £750.

(f) Upon making an application for approval of a type rating course for the purpose of gaining a type rating in an engineer’s licence granted under BCAR Section L only for an aircraft with a maximum weight less than 5700 kg, or its systems or engines, the applicant shall pay a charge of £500.

5.4 Approvals granted under JAR-147

(a) Upon making an application for the grant or variation of a JAR-147 approval, the applicant shall pay:

• For the grant of an approval which includes a single Class/Rating/Limitation combination, a charge of £2300;
• For the addition of a class including a single Rating/Limitation combination, a charge of £1150;
• For the inclusion of each additional Rating/Limitation combination, a charge of £274;
• For the inclusion of an additional site in the approval, a charge of £1150.

• Provided that where the cost of the grant or variation of an approval exceeds the fee paid, the applicant shall pay a charge of such amount as may be decided by the CAA having regard to expenses incurred, subject to a maximum specified in the scheme.

(b) The scale of charges in respect of the investigation required by the CAA for the purposes of satisfying itself that a JAR-147 approval should remain in force for a period of 12 months, commencing 1 April in any year, the holder of the approval shall pay:

• For the renewal of an approval which includes only one Class, a charge of £2300; or
• For the renewal of an approval which includes more than one class, a charge of £2890; plus
• Where more than one site is included in the approval, a charge of £1150 for each additional site included.

Provided that where the cost of maintaining an approval exceeds the renewal fee paid, the holder of the approval shall pay a charge of such amount as may be decided by the CAA having regard to the expenses incurred, subject to a maximum specified in the scheme.

(c) For a major organisational or managerial change the holder of the approval shall pay the cost of the investigation subject to a maximum specified in the scheme.

(d) In respect of the issue of revised documents of approval or for the variation of approval where the CAA deems that no investigation is required, the applicant shall pay a charge of £43.

(e) Upon making an application for the approval of a person authorised to assess personal log book entries in respect of an aircraft maintenance engineer licence, the applicant shall pay a charge of £43.

5.5 Functions Performed Outside the United Kingdom

Provision is made in the Scheme for the CAA to charge for additional costs it may incur where functions are performed abroad.

6 METHOD OF PAYMENT

In general, the fixed or minimum charges are to be paid upon application. In some cases, however, the CAA may agree to an arrangement whereby it will accept applications the charges for which are covered by funds previously deposited with CAA for this purpose. Where a charge depends upon the expense incurred by the CAA, the Scheme provides for the applicant to pay a deposit of up to 10% of the appropriate maximum charge. An
applicant will be notified should the CAA require such a deposit. Any bank or transfer charges associated with an application are payable by the applicant, and the amount of the remittance sent should include any such charges as well as the basic sterling amount due. Cheques should be crossed and made payable to the 'Civil Aviation Authority'.

7 CANCELLATION

This Notice cancels Airworthiness Notice No. 25, Issue 29, dated 25 October 2002, which should be destroyed.
Information For Continued Airworthiness Of UK Manufactured Aircraft

1 INTRODUCTION
The attention of operators of aircraft manufactured in the United Kingdom and of the Type Design Organisations of those aircraft is drawn to this Notice which concerns the scope of continued airworthiness information to be expected from the UK in respect of all aeroplanes and rotorcraft. In due course, it is intended to expand the scope of this Notice to encompass engines, balloons and airships.

The purpose of this Notice is to provide information only. Nothing in it should be taken as overruling any written statement which may be given at any time by the CAA in respect of any given aircraft.

2 DUTIES OF TYPE DESIGN ORGANISATIONS
2.1 The attention of United Kingdom Type Design Organisations is drawn to their obligations under BCAR Chapter A5-1 and Airworthiness Notice No. 36, in respect of the provision and publication of information relating to the Continued Airworthiness of aeroplanes.

2.2 BCAR Chapter A5-1 requires the Type Design Organisation to promulgate such information and ICAO Annex 8, Part II places responsibility on the CAA to transmit such information to other Contracting States which have advised that they have aircraft of the specific Type on their Registers.

2.3 Where a UK Type Design Organisation no longer exists or fails to discharge its responsibilities to provide the minimum provisions in respect of continuing airworthiness to enable ICAO Annex 8 to be satisfied (i.e. Paragraph 1.1(d), (e) and (f) of BCAR Chapter A5-1), the CAA will review all options to maintain the ICAO Annex 8 certification status for the type. These will include:
   (a) finding another suitably approved organisation to take over the type design responsibility, or
   (b) where the aircraft is a simple old vintage type, finding a suitably capable organisation who will enter into a Type Responsibility Agreement with the CAA (see 2.4 below) or
   (c) CAA taking the responsibility directly (see 2.5 below).

2.4 Holders of a Type Responsibility Agreement in accordance with BCAR A5-1, para 4, although not meeting the criteria of a Type Design Organisation, are deemed to be capable of monitoring the continued airworthiness of the type to enable CAA to maintain its ICAO Annex 8 responsibilities.

2.5 Where neither a Type Design Organisation nor a Type Responsibility Agreement exist, in accordance with ICAO Continuing Airworthiness Manual Part 1, Chapter 3, para 3.2, CAA may maintain the type certification status by either:
   (a) taking the ICAO Annex 8 responsibility itself, and/or
   (b) placing a limit on the validity of the type certificate (or equivalent) until such time as service experience reveals an unsafe condition with no organisation able to submit proposals for modification.
3  UK AIRCRAFT TYPES HAVING CONTINUED AIRWORTHINESS SUPPORT

3.1 The Aircraft Types listed in the Appendices to this Notice, are supported with information for Continued Airworthiness in accordance with:

(a) para 2.2 above for Type Design Organisations (Appendix 1).
(b) para 2.4 above for Type Responsibility Agreements (Appendix 2).
(c) para 2.5 above when CAA holds the responsibility (Appendix 3).

At the present time, the lists do not include balloons and airships.

4  UK AIRCRAFT TYPES NOT HAVING SUPPORT FOR CONTINUED AIRWORTHINESS

4.1 Owners and Operators of UK registered aircraft of UK manufacture are advised that for those aircraft (except balloons and airships) not listed in the Appendices, Certification in the Private, Transport or Aerial Work Categories may no longer be permitted.

4.2 Owners and operators of aircraft registered in other countries should consult their national authorities concerning their eligibility for maintaining their National Certificate of Airworthiness.

4.3 CAP 393 Air Navigation The Order and the Regulations, Part III, Article 9 and BCAR A5-1 paragraph 1.2 are applicable whether or not an Aircraft Type of UK manufacture is the subject of a UK Type Certificate.

5  WITHDRAWAL OF AIRWORTHINESS SUPPORT FOR AN AIRCRAFT TYPE

Where no examples of a type are known to be operating, the UK Constructor or Type Certificate Holder must notify their withdrawal of support for the Continued Airworthiness from an Aircraft Type, by the issue of an Alert Service Bulletin or similar document having CAA approval. The CAA will then advise other Airworthiness Authorities accordingly, by deleting reference to the Aircraft Type from the Appendix to this Notice.

6  CANCELLATION

This Notice cancels Airworthiness Notice No. 26, Issue 2, dated 14 March 1996, which should be destroyed.
**Aircraft Types Of UK Manufacture, Having Continued Airworthiness Support**

Aircraft Types are recognised as having continued airworthiness support either from their original manufacturer or from another CAA Approved Organisation.

<table>
<thead>
<tr>
<th>Listing</th>
<th>Support Provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviation Trader ATL 98 Carvair</td>
<td>Aviation Traders Ltd.</td>
</tr>
<tr>
<td>Bristol 170</td>
<td>Airbus UK Ltd., Filton.</td>
</tr>
<tr>
<td>BAC One Eleven Series</td>
<td>Airbus UK Ltd., Filton.</td>
</tr>
<tr>
<td>BAC/SNIAS Concorde (Type I Variant 1)</td>
<td>Airbus UK Ltd., Filton.</td>
</tr>
<tr>
<td>Beagle 121 Pup</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>Blackburn B2</td>
<td>BAE Systems, Brough</td>
</tr>
<tr>
<td>British Aerospace 146 Series</td>
<td>BAE Systems, Woodford</td>
</tr>
<tr>
<td>British Aerospace ATP Series</td>
<td>BAE Systems, Prestwick</td>
</tr>
<tr>
<td>British Aerospace 748 Series (Construction Numbers 1534-1807 only)</td>
<td>BAE Systems, Prestwick</td>
</tr>
<tr>
<td>British Aerospace Jetstream Series (3100/ 3200/ 4100)</td>
<td>BAE Systems, Prestwick</td>
</tr>
<tr>
<td>Britten Norman (Islander Series)</td>
<td>Britten Norman.</td>
</tr>
<tr>
<td>Britten Norman (Trislander Series)</td>
<td>Britten Norman.</td>
</tr>
<tr>
<td>DH Moth Variants (DH60/ 60G/ 60M)</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
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<td>DH 80A Puss Moth</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>DH 82 Tiger Moth Variants (DH82A/ 82B/ 82C)</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>DH 83 Fox Moth</td>
<td>De Havilland Support Ltd. (DHSL)</td>
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<tr>
<td>DH 84 Dragon</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>DH 85 Leopard Moth</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>DH 87 Hornet Moth</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>DH 89a Rapide</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>DH 90 Dragonfly</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>DH 94 Moth Minor</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>DH 104 Dove</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>DH 114 Heron</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>DHC-1 Chipmunk (Mk 21/ 22/ 22a/ 23)</td>
<td>De Havilland Support Ltd. (DHSL)</td>
</tr>
<tr>
<td>EH 101</td>
<td>EH Industries Ltd.</td>
</tr>
<tr>
<td>Handley Page Jetstream Mark 1</td>
<td>BAE Systems, Prestwick</td>
</tr>
<tr>
<td>NAC6 Fieldmaster</td>
<td>E P A Aircraft Co Ltd.</td>
</tr>
<tr>
<td>NDN-1 Firecracker</td>
<td>Atlantic Aeroengineering.</td>
</tr>
<tr>
<td>NDN-1T Turbo-Firecracker</td>
<td>Atlantic Aeroengineering.</td>
</tr>
<tr>
<td>Scottish Aviation Bulldog</td>
<td>BAE Systems, Prestwick</td>
</tr>
<tr>
<td>Scottish Aviation Jetstream (Series 200)</td>
<td>BAE Systems, Prestwick</td>
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</tbody>
</table>
Scottish Aviation Twin Pioneer
Short SD3-30
Short SD3-60 and SD3 Sherpa and SD3-60 Sherpa
Short Skyvan
Short SC5 Belfast
Slingsby T61 Venture
Slingsby T67
Westland Bell 47G-4A & -3B-1

Atlantic Aeroengineering.
Short Brothers, Belfast.
Short Brothers, Belfast.
Short Brothers, Belfast.
Marshall of Cambridge
Slingsby Aviation Ltd
Slingsby Aviation Ltd
GKN Westland Helicopters Ltd, Yeovil.

**NOTE:** The following are updated BAE Systems locations:
- BAE Systems (Operations) Limited
- BAE Systems Aircraft Services Group – Prestwick
- BAE Systems Aircraft Services Group – Woodford
- BAE Systems Aircraft Services Group – Brough
**AIRWORTHINESS NOTICE No. 26**

**Appendix 2**

*Issue 2*

22 March 2002

Aircraft types where the continued airworthiness is maintained under a Type Responsibility Agreement with a suitably qualified organisation.

<table>
<thead>
<tr>
<th>Type</th>
<th>Responsible Organisation</th>
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<tbody>
<tr>
<td>BA Eagle 2</td>
<td>M J Miller, Duxford Airfield</td>
</tr>
</tbody>
</table>
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Appendix 3
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Aircraft types where the CAA is taking direct responsibility for continuing airworthiness in order to maintain the type certificated status, until such time as either a suitable responsible organisation is found or service experience reveals an unresolvable unsafe condition.

NOTE: Aircraft types no longer listed may not qualify for the issue of a C of A.

Type
ARV Super 2 (except kit built versions)
Auster (all variants except Agricola)
Beagle A61 Terrier
Beagle A109 Airedale
Beagle 206
Edgar Percival EP9
Garland Linnet
Glos-Airtourer T3/115/150/ Super 50
Optica OA7
Percival P40 Prentice
Percival Proctor 3/4
Sprint 160 and Club Sprint
Thrupton Jackaroo
Miles M38 Messenger (Type responsibility under a suitable organisation is under review)
Miles M65 Gemini (Type responsibility under a suitable organisation is under review)
Druine D62 Series
Percival P10 Vega Gull
Helicopter Emergency Escape Facilities

1 **APPLICABILITY** This Airworthiness Notice is applicable to those UK registered helicopters required to carry the equipment specified in the Air Navigation Order 2000, as amended Schedule 4 paragraph 4(13) (b) (v) (cc) and being operated:

(a) for the carriage of passengers or cargo to or from vessels or installations used in connection with oil or gas exploration or exploitation; or
(b) for the transfer of personnel to or from vessels or lighthouses;

Additionally, this Notice also applies to helicopters being operated:

(c) over the sea or tidal estuaries in association with pollution monitoring; and
(d) in a dedicated offshore Search and Rescue role.

2 **INTRODUCTION**

2.1 In 1985, a programme of review and improvement of helicopter post-ditching escape facilities was carried out jointly by the CAA and the operators concerned with offshore helicopter operation. Following this review the CAA issued a Direction to Operators requiring action on certain aspects of survival systems, to retrospectively apply recently introduced airworthiness requirements.

2.2 Directions issued to specific operators are not a usual means of promulgating such requirements, but are used only on rare occasions where action needs to be taken as a matter of urgency on a number of different aircraft types. This Airworthiness Notice is necessary to ensure that the applicability of the relevant requirements is drawn to the attention of all concerned.

3 **COMPLIANCE** Compliance with this Notice is required prior to operating any helicopter defined in paragraph 1 above.

4 **REQUIREMENTS**

**NOTE:** For all references to BCAR requirements, equivalent requirements agreed with the CAA may be acceptable.

4.1 All liferaft installations shall comply with the requirements of BCAR 29.1411(d) (3), which require liferaft installations to be suitable for use in all sea conditions in which helicopter ditching, flotation and trim are required to be evaluated.

4.2 All Emergency Exits, including crew Emergency Exits, shall be marked and illuminated to comply with BCAR 29.811(a), which requires exit marking to remain adequate if the helicopter capsizes after ditching and the cabin becomes submerged.

**NOTE:** Guidance on the interpretation of this requirement is in paragraph 1 of CAA Information Leaflet AD/IL/0124/1-4 dated 16 December 1987.

4.3 All non-jettisonable doors of Ditching Emergency Exits shall comply with BCAR 29.809(i), which requires such doors to have means of securing them in the open position so they do not interfere with occupants egress in all sea conditions up to the maximum required to be evaluated for ditching and flotation.
4.4 All openings in passenger compartments agreed by the CAA as suitable for the purpose of underwater escape shall be equipped so as to be openable in an emergency.

**NOTE:** This means that all openings such as windows of a suitable size shall be made openable from inside the helicopter. Further advice on interpretation of this requirement is contained in paragraph 2 of CAA Airworthiness Information Leaflet AD/IL/0124/1-4 dated 16 December 1987.

5 **ADDITIONAL INFORMATION**

5.1 CAA Specification No. 2 requires helicopter liferafts to have a high level of damage tolerance. This can be provided in part by design of the liferaft, but action is also necessary to minimise the chances of liferaft damage while the liferaft is on the water adjacent to the helicopter, due to projections on the exterior of a helicopter.

5.1.1 Examples of projections which need to be considered are aerials, overboard vents, unprotected split pin tails, guttering and any projection sharper than a three dimensional right-angled corner.

5.2 It is recommended that all projections likely to cause damage in a zone delineated by boundaries which are approximately 1·22 m (4 ft) above and 0·61 m (2 ft) below the established static water line, should be modified or suitably protected to minimise the likelihood of their causing damage to a deployed liferaft, and that all relevant approved maintenance schedules should be amended to ensure that such protection remains effective.

5.2.1 While the boundaries specified in paragraph 5.2 are intended as a guide, the total area which should be considered should also take into account the likely behaviour of the liferaft after deployment in all sea states up to the maximum in which the helicopter is capable of remaining upright.

5.3 Operators and maintenance organisations are reminded that wherever a modification or alteration is made to a helicopter within the boundaries specified, consideration should be given to affording such protection as may be required to prevent the modification or alteration causing damage to a deployed liferaft.

5.4 Particular care should also be taken during routine maintenance to ensure that additional hazards are not introduced by, for example, leaving inspection panels with sharp corners proud of the surrounding fuselage surface, or allowing door sills to deteriorate to a point where sharp edges become a hazard.

5.5 The same considerations apply in respect of emergency flotation equipment.

5.6 As part of the overall assessment of flotation equipment and its operation brought about by the issue of the Direction, the maintenance aspects of the various systems were examined. This resulted in a rationalisation of all the relevant approved maintenance schedules to ensure a common approach to the maintenance of flotation systems across different operators fleets. Operators should therefore, ensure that the established common approach to the maintenance of on board flotation equipment is continued.

6 **CANCELLATION**

This Notice cancels Airworthiness Notice No. 27, Issue 2, dated 9 November 1992, which should be destroyed.
Civil Owned Aircraft Operating Under Contract To The Ministry Of Defence (MOD)

1 INTRODUCTION

1.1 The Civil Aviation Authority has been approached on a number of occasions by civil organisations for advice regarding the operation of civil aircraft for the MoD. The purpose of this Airworthiness Notice is to explain the role of the CAA in respect of such operations.

1.2 The Ministry of Defence (MoD) have on occasions contracted civil organisations to provide support services. This has included the maintenance of military owned and registered aircraft used in transport, communication and training roles. All military registered aircraft are under the jurisdiction of the Secretary of State for Defence.

1.3 The scope of these contracts has developed to such an extent that civilian organisations have been requested to provide the aircraft and training staff as well as the maintenance support for the envisaged operation. There is a likelihood that further contracts for aviation support by civilian organisations will be offered for tender.

2 CIVIL REGISTERED AIRCRAFT

Civil registered aircraft operating on contract to the MoD remain under the jurisdiction of the CAA. The provisions of the Air Navigation Order and JAR-145 apply to these aircraft at all times.

3 CIVIL OWNED MILITARY REGISTERED (COMR) AIRCRAFT

3.1 Background

3.1.1 It has been recognised by the MoD that certain roles assigned to civil registered aircraft would result in their operation outside the provisions of the Air Navigation Order, e.g. flight below 500 ft and certain helicopter winching operations. To facilitate such operations the aircraft need to be operated on the military register.

3.1.2 In such cases, the MoD, as the responsible authority for the COMR aircraft, has contracted the CAA to provide a continued airworthiness oversight service. Subject to the provisions of this contract the CAA will permit the pooling of aircraft spares between the COMR aircraft and civil registered aircraft of a similar type.

NOTE: Civil operators who enter into a contract with the MoD to provide COMR aircraft will be notified in writing by the CAA that the pooling of spares is permitted for those aircraft included in the contract which are subject to oversight by the CAA. The pooling of civil and military spares is not permitted in respect of military registered aircraft which are not subject to oversight by the CAA.

3.2 MoD /CAA Contract

3.2.1 The continued airworthiness oversight by the CAA will be aligned with the requirements and procedures which would be applicable had the aircraft remained on the Civil Register. The principal elements for CAA oversight are as follows:

(a) COMR aircraft must be of a type approved by the CAA and have been issued with a UK Certificate of Airworthiness prior to transfer to the Military Register.

(b) Maintenance of COMR aircraft is to be undertaken by an organisation holding a JAR-145 approval for the aircraft type or if specified in the contract between the MOD and
the civil contractor, a BCAR Chapter A8-15 Maintenance Organisation for aircraft not exceeding 2730kg.

(c) Certification of maintenance on COMR aircraft is to be by personnel authorised by the JAR-145 approval holder in accordance with the provisions of Airworthiness Notice No. 14, and the associated supplements or by type rated licensed engineers in the case of aircraft maintained by a BCAR Chapter A8-15 Maintenance Organisation.

(d) COMR aircraft are to be maintained in accordance with a maintenance schedule/programme approved by the CAA.

(e) COMR aircraft will be subject to an annual/triennial survey by the CAA, equivalent to a Certificate of Airworthiness renewal survey, commencing 12/36 months after the date of transfer of the aircraft to the Military Register. The JAR-145 or BCAR Chapter A8-15 maintenance organisation will be required to notify the CAA Application and Certifications Section 30 days prior to the date that the annual/triennial inspection is due. Flight testing of the aircraft will be required in accordance with BCAR A/B 3-3 and A/B 3-5.

(f) COMR aircraft are to be operated in accordance with a flight manual approved by the CAA. Any changes to the flight manual will require CAA approval in accordance with BCAR Chapter A/B7-2.

NOTE: In accordance with MoD policy, promulgated in Joint Service Publication 318B, the MoD will supplement the conditions and limitations of aircraft operation within a service regulated flying environment through the issue of a Military Aircraft Release.

(g) Modification to COMR aircraft will require CAA approval in accordance with BCAR Chapter A2-5 or B2-2 paragraph 7.

NOTE: Modifications to install military equipment which does not hold civil approval will be assessed by the CAA to determine that it causes no hazard to the aircraft. Operational performance of such modifications will not be evaluated other than the effect on aircraft safety.

(h) All parts and appliances, except special role equipment of military origin with no civil approval, to be used on COMR aircraft are to be maintained by a JAR-145 approved maintenance organisation. Special role equipment of military origin should be maintained in accordance with the manufacturer’s recommendations.

(i) COMR aircraft must remain in compliance with CAA Airworthiness Directives, mandatory modifications, inspections and changes to approved documentation as specified in CAA Airworthiness Notice No 36.

3.2.2 Enquiries regarding the content of this notice should be made to the Application and Certification Section, Civil Aviation Authority, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR. Telephone 01293 573160.

4 CANCELLATION

This Notice cancels Airworthiness Notice No. 28, Issue 2, dated 18 March 1999 which should be destroyed.
1 HEAD OFFICE

1.1 The address of the Safety Regulation Group Head Office is:
Civil Aviation Authority
Safety Regulation Group
Aviation House
Gatwick Airport South
West Sussex
RH6 0YR
Telephone: Crawley (01293) 567171
Telex: 878753
Facsimile: Crawley (01293) 573999

There is a direct dial system for all staff at Aviation House, Gatwick, which should be used whenever possible. A short list of useful numbers is given in Appendix 1.

A list of UK Regional Offices is given in Appendix 2 and for Overseas Offices in Appendix 3.

1.2 When in the vicinity, Aviation House can be identified by its proximity to a large radar scanner and old Beehive terminal building. The building itself is four storeys high, grey in appearance with tinted glass windows.

Maps showing the location of Aviation House and details of the shuttle bus service from the South Terminal can be found at http://www.srg.caa.co.uk/aboutus/locations.asp.

Printed copies are available from:-
CAA Library
GW, Aviation House
Gatwick Airport South
West Sussex
RH6 0YR
Telephone: 01293 573725

1.3 A visitors’ car park is provided at Aviation House. Visitors arriving by train should alight at Gatwick Airport Station, cross the Airport Terminal floor to the exit beside International Arrivals, this will lead to the Perimeter Road and a Gatwick Direct shuttle bus, which operates at 20-minute intervals during the day. Visitors should enter Aviation House by the main entrance, adjacent to the visitors’ car park.

1.4 The Personnel Licensing Department provides an enquiry service at the Flight Crew Licensing public counter between 0900 and 1700 hours on normal working days.

1.5 Aviation House Gatwick Library is open to personal callers from 1300 to 1630.

2 INFORMATION FOR ENGINEERS

2.1 The CAA is anxious that there should be close liaison between its Surveyors and Licensed Aircraft Maintenance Engineers, and they should, in their own interest, keep in close touch with the CAA Office responsible for the supervision of their area.

2.2 When changing their place of employment, engineers should notify the CAA Office in the area which they are leaving. They should also notify the CAA Office responsible for the
supervision of their new area of employment. A list of UK Regional Offices is given in Appendix 2 and for Overseas Offices in Appendix 3.

NOTE: This paragraph does not apply to Derby which is an area office for Propulsion Department.

3 AIRCRAFT REGISTRATION SECTION

Information on the United Kingdom Register of Aircraft and the United Kingdom Register of Aircraft Mortgages is available from:

Aircraft Registration Section
Civil Aviation Authority
45-59 Kingsway
London
WC2B 6TE
Telephone: 020 7453 6666
Fax: 020 7453 6670
e-mail: aircraft.reg@srg.caa.co.uk

A public counter is open to personal callers from 1000 to 1600 hours on working days.

4 CANCELLATION

This Notice cancels Airworthiness Notice No. 29, Issue 14, dated 23 October 2000, which should be destroyed.
AIRWORTHINESS NOTICE No. 29
Appendix 1
Issue 13
29 October 2001

Direct Dial Telephone Numbers

AERODROME STANDARDS
Head of Aerodrome Standards Department 01293 573252
Head of ASD Safety Regulation Operations & Inspection 01293 573260

AIRCRAFT MAINTENANCE STANDARDS DEPT
Department Administration 01293 573366
Maintenance, Policy and Standards 01293 573368

AIRCRAFT PROJECTS DEPARTMENT
Department Administration 01293 573315

APPLICATION AND CERTIFICATION
Deputy Manager – Certification Enquiries – Technical 01293 573160
Help Desk – Certification Enquiries – Administration (Incl. Fees) 01293 768374
Application & Certification E-mail Address A&C@srg.caa.co.uk
Airworthiness Directives & Maintenance Approvals Administration 01293 573149

FINANCE
Chief Accountant 01293 573784

FLIGHT CREW LICENSING
Administration 01293 573700

FLIGHT DEPARTMENT
Department Administration 01293 573114

FLIGHT OPERATIONS DEPARTMENT
Administration 01293 573399
Aeroplanes, Policy 01293 573412
Helicopters, Policy 01293 573587
Aeroplanes, Inspectorate 01293 573710
Helicopters, Inspectorate 01293 573429

GENERAL AVIATION DEPARTMENT
Policy Section (Safety Promotion) 01293 573225
Administration 01293 573506

INTERNATIONAL TRAINING SERVICES
Administration 01293 573391

LIBRARY AND INFORMATION CENTRE
General Enquires 01293 573725
MEDICAL
Administration 01293 573700

PERSONNEL LICENSING DEPARTMENT
Engineering and Flight Crew Licensing 01293 573700

PROPULSION DEPARTMENT
Secretary to Head of Department 01293 573195

REQUIREMENTS AND POLICY UNIT
Section Administration 01293 573073

SAFETY INVESTIGATION AND DATA DEPARTMENT
Administration 01293 573220

SYSTEMS DEPARTMENT
Department Administration 01293 573132
Head of Department 01293 573140

AIRCRAFT REGISTRATION SECTION
UK Register of Civil Aircraft 020 7453 6666
UK Register of Aircraft Mortgages 020 7453 6666
Head of Aircraft Registration 020 7453 6660
AIRWORTHINESS NOTICE No. 29  
Appendix 2  
Issue 25  
25 October 2002  

CAA Safety Regulation Group - UK Regional Office Addresses  
Maps showing the location of our UK Regional Offices can be found at http://www.srg.caa.co.uk/aboutus/locations.asp.  
Printed copies are available from:-  
CAA Library  
GW, Aviation House  
Gatwick Airport South  
West Sussex  
RH6 0YR  
Telephone: 01293 573725  

NOTE: For all Regional Offices listed below, please address correspondance to ‘Civil Aviation Authority, Safety Regulation Group, ......’

1 ABERDEEN  
Aircraft Maintenance Standards Department,  
Hangar 1,  
Wellheads Drive,  
Aberdeen Airport East,  
Dyce, Aberdeen,  
AB21 7GQ.  
Telephone: Aberdeen (01224) 793530  
Facsimile: (01224) 724387  

2 GATWICK  
Ground Floor,  
Consort House,  
Consort Way,  
Horley,  
Surrey,  
RH6 7AF.  
Telephone: Crawley (01293) 828221 for AMSD  
(01293) 828222 for Flight Ops  
Facsimile: (01293) 824014  

3 HEATHROW  
Sipson House,  
595 Sipson Road,  
Sipson,  
West Drayton,  
Middlesex,  
UB7 0JD.  
Telephone: 020 8260 2950  
Facsimile: 020 8260 2951
<table>
<thead>
<tr>
<th></th>
<th>Location</th>
<th>Address</th>
<th>Telephone</th>
<th>Facsimile</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>IRVINE</td>
<td>Aircraft Maintenance Standards, Galt House, Bank Street, Irvine, Ayreshire, KA12 0LL.</td>
<td>(01294) 204840</td>
<td>(01294) 312053</td>
</tr>
<tr>
<td>5</td>
<td>LUTON</td>
<td>First Floor, Barratt House, 668 Hitchin Road, Luton, Beds., LU2 7XH.</td>
<td>Luton (01582) 410304</td>
<td>(01582) 457961</td>
</tr>
<tr>
<td>6</td>
<td>MANCHESTER</td>
<td>Suite 5, International Office Centre, Styal Road, Wythenshaw, Manchester, M22 5WB.</td>
<td>0161 499 3055</td>
<td>0161 499 3048</td>
</tr>
<tr>
<td>7</td>
<td>NE AND MIDLANDS</td>
<td>Building 65, Ambassador Road, East Midlands International Airport, Castle Donnington, Derby, DE74 2SA.</td>
<td>Derby (01332) 813400</td>
<td>(01332) 850335</td>
</tr>
<tr>
<td>8</td>
<td>STANSTED</td>
<td>Walden Court, Parsonage Lane, Bishop’s Stortford, Herts., CM23 5DB.</td>
<td>Bishop’s Stortford (01279) 466747</td>
<td>(01279) 466757</td>
</tr>
<tr>
<td>9</td>
<td>WESTON-SUPER-MARE</td>
<td>Unit 502, Worle Parkway, Weston-Super-Mare, BS22 6WA.</td>
<td>(01934) 529850</td>
<td>(01934) 522068</td>
</tr>
</tbody>
</table>
UK CIVIL AVIATION AUTHORITY

AIRWORTHINESS NOTICE No. 29
Appendix 3
Issue 20
18 March 2003

CAA Safety Regulation Group – Overseas Regional Office Addresses

BRUNEI, DARUSSALAM

c/o Department of Civil Aviation
Brunei International Airport
Bandar Seri Begawan 2015
Negara
Brunei
Darussalam
Telephone: 00-673-2 330649 (Direct Line)
Telephone: 00-673-2 330142 Extn 1322
AFTN: WBSBYA
Telex: BU 2267 DCABWN
Telex: BU 2571 RTT
Telegraphic Address: ‘CIVILAIR BRUNEI’
Facsimile: 00-6732-330649

CARIBBEAN

Location:
UK Civil Aviation Authority
Terminal Building
Providenciales International Airport
Turks & Caicos Islands
British West Indies
Telephone: 001 649 231 3909
Facsimile: 001 649 941 5996

Surface Mail:
UK Civil Aviation Authority
PO Box 675
Providenciales
Turks & Caicos Islands
British West Indies

FIJI*

PO Box 9385
Nadi International Airport
Nadi
Fijian Islands
South Pacific
Telephone: 00-679 721357 (Direct Line)
Telephone: 00-679 721555 Extn 305
Cables: CIVILAIR
AFTN: NFHOYAYX
Facsimile: 00-679 721500

Address correspondence to ‘Airworthiness Advisory Services. UK Civil Aviation Authority, Safety Regulation Group, ......’

CYPRUS

c/o Department of Civil Aviation
Grivas Dhigenis Avenue No. 16
Nicosia
Cyprus
Telephone: 00-3572 2 404100/404101
Andrew Varley: 00-3572 2 404120
Facsimile: 00-3572 2 304708
Overhauls, Modifications, Repairs And Replacements To Aircraft Not Exceeding 2730 kg With Certificates Of Airworthiness In The Special Category

1 There have been a number of accidents to aircraft in the above Category on which it was subsequently established that work had been done which was such that, under Article 9(7) of the Air Navigation Order 2000 as amended, the Certificate of Airworthiness may have ceased to be in force.

2 Article 9(7) (a) of the Air Navigation Order 2000 as amended, provides that a Certificate of Airworthiness issued in respect of an aircraft shall cease to be in force if the aircraft, or such of its equipment as is necessary for the airworthiness of the aircraft, is overhauled, repaired or modified, or if any part of the aircraft or of such equipment is removed or is replaced, otherwise than in a manner and with material of a type approved by the Authority either generally or in relation to a class of aircraft or to the particular aircraft.

3 Although Articles 12(4) and 12(5) of the Order specifically excludes certain Special Category aircraft from the requirements for the issue of Certificates of Release to Service, the provisions of Article 9(7) apply to all aircraft without exception. Any person, therefore, who intends to undertake work on an aircraft covered by this Notice should only do so when he is in possession of adequate knowledge of the tasks involved, has access to the necessary facilities and the relevant maintenance, overhaul or repair manuals, and uses parts or materials which are known to satisfy CAA requirements. If any doubt exists as to whether these conditions are met, the person concerned should seek advice from a CAA approved organisation or a licensed aircraft maintenance engineer.

4 It is emphasised that a person who flies an aircraft when the Certificate of Airworthiness has ceased to be in force by virtue of Article 9(7) of the Air Navigation Order 2000 as amended, may render himself liable to prosecution for contravention of Article 8 of the Order and there may be other serious consequences.

5 CANCELLATION

This Notice cancels Airworthiness Notice No. 32, Issue 2, dated 1 April 1985, which should be destroyed.
Unprotected Starter Circuits In Aircraft Not Exceeding 5700 kg (12500 lb)

1 Minor fires have occurred in light aircraft due to starter motors burning out and electric cables becoming over-heated as a result of starter relay contacts jamming, a defect which may not be apparent prior to take-off.

2 When this Notice was first issued in 1949 the ARB required provision of a battery master switch which, although not eliminating a defect of this nature, enabled a pilot to isolate the battery and thereby reduce the risk of a serious fire.

3 Development of aircraft electrical systems has subsequently reduced the value of a battery master switch and led to the provision of alternative forms of protection.

4 The CAA recommends that the wiring of all aircraft up to and including a maximum authorised weight of 5700 kg (12500 lb) be checked (if necessary, in conjunction with an engineer licensed in Category ‘X’ – Electrical) to ascertain whether failure of relay contacts to open on release of the cockpit starter switch may result in overheating of electrical cables and the starter motor.

5 Where such a hazard is found to exist, one of the following methods of protection is acceptable.
   (a) Provision of a battery master switch or relay. This alternative alone is acceptable on simple aircraft which are able to continue safe flight and effect a landing without electrical power. A battery master switch should not be provided on aircraft with third brush generator systems unless special precautions are taken.
   (b) Provision of a manually operated starter isolation switch in series with the starter relay contacts.
   (c) Provision of two starter relays in series.
   (d) Provision of a warning light, or lights, to indicate to the pilot that take-off should not be attempted and that electrical power should be disconnected as the starter circuit is still energised.
   (e) Any alternative method of protection, isolation or warning agreed by the CAA.

6 The inspection referred to in paragraph 4 is mandatory in respect of newly-registered aircraft and certificates of airworthiness will not be issued unless compliance with paragraph 5 has been established.

7 CANCELLATION

This Notice cancels Airworthiness Notice No. 33, Issue 3, dated 1 February 1972, which should be destroyed.
Civil Aviation Authority – DGAC Arrangement For The Acceptance Of Materials Manufactured In France

1 INTRODUCTION

1.1 The purpose of this Airworthiness Notice is to advise UK organisations of the procedures to be followed and the documentation required when procuring raw materials manufactured in France for use in products/parts affected by airworthiness requirements, as identified by the Air Navigation Order 2000, Article 9(7).

1.2 Requirements applicable to airworthiness in France are prescribed and published by the Direction Generale de l’Aviation Civile (DGAC) for the certification of civilian aeronautical products. Effective 1 January 1994 the arrangements in France were revised whereby Bureau Veritas ceased to act on behalf of DGAC for any activity. A new organisation was formed and named GS Aviation Civile (GSAC). GSAC is the operational branch of DGAC and acts on behalf of DGAC for the performance of supervision and the technical findings of compliance in the field with a reporting line to DGAC/SFACT (Service de la Formation Aeronautique et du Controle Technique) including the granting of all production approvals.

1.3 In the particular case of structural metallic raw materials, an arrangement has been agreed whereby a DGAC approval can be granted to a French producer, based on applicable elements of JAR-21 Subpart G used as a French national code, to facilitate the supply of certified materials to the UK. In such cases, the certification document will be a standardised Inspection Certificate conforming to EN10204 ‘3.1.B’ issued under the authority of a DGAC approval, or a standardised Inspection Report conforming to EN10204 ‘3.2’ issued under the authority of a DGAC/GSAC surveyor, carrying the specified certification wording as stated in paragraph 2.1(c) of this Notice. However, a JAA Form One is NOT available and should not be requested.

1.4 Paragraph 2 of this Airworthiness Notice specifies the procedures to be followed when orders are placed on companies based in France by United Kingdom customers who require compliance with British Civil Airworthiness Requirements (BCAR) or Joint Aviation Requirements (JAR) for the supply of raw materials.

2 PROCEDURES

2.1 Raw Materials

(a) Raw materials which are to be obtained from French sources who hold an appropriate approval for material manufacture, issued by the DGAC, for incorporation in UK registered aircraft, and which, therefore, must comply with British Civil Airworthiness Requirements, are acceptable to the CAA on a basis of certification in accordance with 2.1(c) and this must be requested on the order placed with any organisation in France.

(b) The order must quote, or include, all the appropriate standards and technical references, e.g. drawings, specifications, quality assurance clauses. Any queries in connection with the order will normally be settled by DGAC and the French/British organisations concerned, but any variations from the standards detailed in the order must be accepted by the primary design/manufacturing organisation.
(c) The wording of the certification shall be as follows:

Certified that, unless otherwise stated above, the whole of the above-
mentioned materials have been manufactured, tested and inspected in
accordance with terms of the contract/order applicable thereto and conform
fully with the standard/specification quoted herein and the requirements of
the Civil Aviation Authority.

Signed .................................................................

for and on behalf of..................................................

Approval reference ..................................................

Date .................................................................

3 GENERAL

(a) All fees associated with DGAC/GSAC involvement will, in principle, be chargeable to
the French companies involved.

(b) Any cases of difficulty in implementing these procedures should be reported to the
CAA initially by reference to the Approvals and Quality Assurance Section, Aviation
House, Gatwick.

4 CANCELLATION This Notice cancels Airworthiness Notice No. 34, Issue 7, dated 7 No-
vember 1995, which should be destroyed.
Light Aircraft Piston Engine Overhaul Periods

1 Normally, for a light aircraft piston engine, CAA will accept the engine manufacturer’s overhaul period recommendations which have been promulgated under a system approved by the responsible airworthiness authority. Light aircraft engine in this context means either:
(a) an engine installed in an aircraft, the Maximum Weight of which does not exceed 2730 kg, or
(b) an engine of 400 hp or less.

NOTE: For the purpose of this Notice ‘engine’ is defined as in JAR-1 and includes those components and equipment necessary for satisfactory functioning and control. The propeller and its associated equipment are excluded except where agreed by the CAA SRG Propulsion Department.

2 Some manufacturers’ publications permit operation beyond the overhaul periods recommended, at the discretion of the owner/operator, if the condition of the engine shows it to be justified. In certain instances the recommended overhaul periods are associated with particular rates of engine utilisation, service bulletin/Modification configuration and types of operation. CAA policy in respect of engines used in light aircraft is set out in paragraphs 3 to 6 and in the Appendices to this Notice.

3 Continuation in service shall be in accordance with paragraph 3.1, as qualified by paragraphs 3.1.1 to 3.1.3, as appropriate.

3.1 Engines may be operated to the periods between overhauls which have been recommended by the manufacturer and promulgated under a system approved by the responsible airworthiness authority, provided they conform to the appropriate service bulletin/modification configurations and types of operation. All such overhaul period recommendations by the manufacturer constitute a recommended overhaul period for the purposes of this Airworthiness Notice, including recommendations by the manufacturer for reduced overhaul periods with particular types of operation or particular service bulletin/Modification configurations.

3.1.1 Where any overhaul period recommendation is stated in terms of both operating time and calendar time limitations, an engine which becomes restricted initially by calendar limitation may continue in service until the operating time limitation is reached, subject to inspection in accordance with paragraph 4 at the calendar time limitation, and subsequently at 100 hours or yearly intervals, whichever occurs first, in order to assess its condition. Calendar time periods run from the date on which the appropriate release document was signed, by the manufacturer in the case of a new engine, or by the overhauler in the case of an overhauled engine, unless it can be established that the engine was adequately inhibited/stored up to the time of installation.

3.1.2 Engines which have reached the operating time limitation of a recommended overhaul period may continue in service for a further period of operation not exceeding 20% of the recommended operating time, subject to (a), (b), (c) and (d).
(a) Compliance being shown with the appropriate limitations specified in Appendix No. 1 to this Notice.
(b) Compliance being shown with any Airworthiness or Additional Directive which requires compliance at engine overhaul, unless otherwise agreed by CAA.

(c) The engine must have been operated in an aircraft registered in the United Kingdom for a period of at least 200 hours immediately prior to completion of the engine manufacturer’s overhaul period recommendation.

(d) The engine being inspected in accordance with paragraph 4 in order to assess its condition immediately prior to the increase, and subsequently at 100 hour or yearly intervals, whichever occurs first. For engines operated in crop spraying aircraft the inspection must be repeated at 50 hour intervals.

3.1.3 Engines which have complied with paragraphs 3.1 to 3.1.2, and have completed the 20% extension of paragraph 3.1.2 may continue in service indefinitely, subject to (a), (b), (c) and (d).

(a) The engine being installed in aircraft not exceeding 2730 kg, and issued with Private Category Certificate of Airworthiness or otherwise not used for Public Transport or Aerial Work.

(b) Compliance being shown with the appropriate limitations specified in Appendix No. 1 to this Notice.

(c) The engine being inspected in accordance with paragraph 4 in order to assess its condition before exceeding 120% of the recommended overhaul period and subsequently being inspected and re-assessed at 100 hour or yearly intervals, whichever occurs first.

(d) The Certificate of Airworthiness, if other than Private Category, of the aircraft in which the engine is installed being submitted to a CAA Regional Office for endorsement to indicate that, during the period in which the engine is operating beyond 120% of the recommended overhaul period, Public Transport and Aerial Work are prohibited.

3.2 In the event that the inspection referred to in paragraphs 3.1.1, 3.1.2 and 3.1.3 results in rejection, the affected assembly, e.g. cylinder, must be completely overhauled.

4 The inspections referred to in paragraphs 3.1.1, 3.1.2 and 3.1.3 to assess the condition of engines shall be in accordance with Civil Aircraft Airworthiness Information and Procedures Leaflet 7-6 and shall be carried out by persons or Organisations as follows:

(a) Engines installed in aircraft operated for Public Transport and Aerial Work shall be inspected by an appropriately licensed aircraft maintenance engineer or an Organisation specifically approved for the purpose.

(b) Engines installed in aircraft operated in the Private Category or otherwise prohibited from operation for Public Transport and Aerial Work, which have not exceeded 120% of the recommended overhaul period, may be inspected by the operator, but shall be inspected and certified by an appropriately licensed aircraft maintenance engineer or an Organisation specifically approved for the purpose at the next and each subsequent Certificate of Airworthiness renewal.

(c) Engines which are to operate beyond 120% of the recommended overhaul period shall be inspected by an appropriately licensed aircraft maintenance engineer or an Organisation specifically approved for the purpose.

5 In no case shall any mandatory restrictions be exceeded, and the compliance with mandatory bulletins/modifications/inspections shall be completed at the specified times.

6 In the case of engines not incorporating all the service bulletins/modifications or parts which would enable it to qualify currently for any recommended overhaul period as defined in paragraph 3.1 of this Notice, or of engine types not included in the manufacturers’ bulletins, a specific recommendation in writing must be sought from the manufacturer, and if this is not obtainable, application made to the CAA. The CAA need not be consulted in a case where the only question is that an engine manufacturer’s documents restrict recom-
mendations of TBOs or TBO extensions to engines embodying only parts specified by the engine manufacturer: the CAA will not apply such restrictions provided that all parts are approved by the original engine Certificating Authority or by the CAA and there has been no adverse experience of the parts.

7 For clarity, the requirements of paragraphs 3 and 4 are presented in tabular form in Appendix No. 2.

8 CANCELLATION This Notice cancels Airworthiness Notice No. 35, Issue 17, dated 16 March 1993, which should be destroyed.
The concept of allowing engines to run beyond the manufacturer’s recommended overhaul period depends upon the presumption that it is possible to check the condition of the engine by prescribed inspections carried out at defined intervals. It is not intended to provide a freedom to run until the engine fails. The validity of the concept depends on the ability of the inspections to give warning of impending failure and in many areas of the engine this ability exists. There are, however, some types of failure (e.g. crankshaft cracking, counterweight wear) for which predictive checks are not possible other than by stripping.

The CAA has sought the advice of the manufacturers of the majority of the piston engines currently used in light aircraft to try to identify those engine components which service experience has shown to have running time limits beyond which it would not be reasonable to operate, i.e. components the failure of which are not susceptible to prior detection but which would result in either an unacceptably high failure rate or a hazardous failure. These components and the associated life limits are detailed in paragraph 5 and further information will be added as it becomes available.

In assessing the suitability of any engine to continue in operation beyond the manufacturer’s recommended overhaul period, the engineer concerned must not go beyond any life limits and conditions specified in this Appendix.

The CAA is taking the unusual step, in allowing this system to be applied to piston engines in private light aircraft, of proceeding without the agreement of all the manufacturers concerned. This does not imply that the CAA considers it is better informed than the manufacturers. The CAA has made its decision on the grounds of the effect on airworthiness only, whilst the manufacturers have probably taken into account economics and serviceability. The CAA feels that the operator must make his own decisions on these other aspects.

LIMITATIONS

5.1 **Rolls-Royce Gipsy Major Engines** Prior to running beyond 120% of the manufacturer’s recommended overhaul period, engines other than Major 10 and earlier marks incorporating Modification 2385 (splined propeller attachment) must have the taper portion of the crankshaft sulfinuz treated by Modification 2690. In accordance with Rolls-Royce Technical News Sheet G15, engines must not exceed an overhaul period of 1000 hours unless Modification 2495 is embodied.

5.2 **Avco Lycoming Engines.** Nil.

5.3 **Rolls-Royce Motors 0 240 Engine.** Nil.

5.4 **Teledyne Continental Motors.** Nil.
**Light Aircraft Piston Engine Overhaul Periods**

<table>
<thead>
<tr>
<th>Normal Overhaul Period (Operating Hours)</th>
<th>Public Transport/Aerial Work</th>
<th>Private Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer’s recommended period provided the engine conforms to appropriate service bulletin/modification configuration and types of operation. <strong>NOTE:</strong> Engines which have both a manufacturer’s calendar time and operating time limitation, and become restricted initially by calendar limitation may continue in service until operating time limitation subject to inspection (see paragraph 4) at the calendar time limitation, and subsequently at 100 hour or yearly intervals, whichever occurs first.</td>
<td><strong>NOTE:</strong> Compliance with Appendix 1 to this Notice.</td>
<td>Engines may continue in service indefinitely subject to: (a) Compliance with Appendix 1 to this Notice. (b) Further inspection in accordance with paragraph 4 at 120% and thence at 100 hour or yearly intervals, whichever occurs first.</td>
</tr>
</tbody>
</table>

**NOTE:** Engines which have both a manufacturer’s calendar time and operating time limitation, and become restricted initially by calendar limitation may continue in service until operating time limitation subject to inspection (see paragraph 4) at the calendar time limitation, and subsequently at 100 hour or yearly intervals, whichever occurs first.

**Extensions not exceeding 20% of normal Overhaul Period**

- Compliance with Appendix 1 to this Notice.
- Compliance with any Airworthiness or Additional Directives.
- Inspections in accordance with paragraph 4 at completion of normal overhaul period and then at 100 hour or yearly intervals, whichever occurs first. (For engines operated in crop-spraying aircraft the inspections must be repeated at 50 hour intervals).

**Extensions in excess of 20% (applicable only to aircraft not exceeding 2730kg)**

- No further extension unless C of A endorsed to indicate that during the period the engine is operating beyond 120% of Normal Overhaul Period, Public Transport and Aerial Work are prohibited.

**NOTE:** This Table is intended for easy reference only; for detail the main text of the Notice applies.
Airworthiness Directives – Adoption of JAR-39

1 INTRODUCTION

1.1 On the 1 January 2003 JAR-39 (Airworthiness Directives) was issued by the JAA with an 18 month effectivity date. JAR-39 defines the procedural requirements for the issue of Airworthiness Directives by JAA NAAs. An Airworthiness Directive is a document issued or adopted by the Authority of the State of Registry of an aircraft which mandates the actions to be performed to restore an acceptable level of safety to an aircraft when an unsafe condition has been identified.

1.2 The corrective action can include any of the following and be addressed against the aircraft, engine, propeller, part or appliance:
   - repair;
   - removal from service;
   - design change;
   - inspection;
   - change to the limitations or procedures associated with a product, part or appliance (AFM, life limits, CMR etc.).

*NOTE:* For the purposes of this Notice, aircraft, engines and propellers are defined as products.

2 COMPLIANCE

2.1 JAR-39 states that no person may operate an aircraft, to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.

Article 9(7) of the Air Navigation Order 2000 (ANO) as amended is such that a Certificate of Airworthiness (C of A) in respect of an aircraft registered in the United Kingdom will cease to be in force until any modification or inspection required by the CAA is complied with.

Article 81(5) of the ANO is such that the CAA may, on sufficient grounds being shown, vary a Flight Manual, Performance Schedule, or other document incorporated by reference in a C of A. Furthermore, under the provisions of Article 8 of the ANO, an aircraft shall not fly unless any conditions subject to which the C of A was issued or rendered valid are complied with.

For the purposes of compliance with Articles 9(7) and 81(5) a modification, inspection or change to approved documentation required by the CAA is one that has been so identified in an Airworthiness Directive issued or adopted by the CAA. For the purposes of this Notice and the ANO, an Airworthiness Directive is the means by which mandatory status is conferred on any modification, inspection, repair, life limit, or approved documentation.

JAR-OPS 1.890(a)(5) and 3.890(a)(5) requires an operator to comply with any Operational Directive, Airworthiness Directive and any other continued airworthiness requirement made mandatory by the CAA.
Accordingly JAR-39, the ANO and JAR-OPS all provide overlapping requirements for requiring compliance with Airworthiness Directives for aircraft registered and operated in the UK.

2.2 The CAA will adopt JAR-39 on the 1 July 2003. With the adoption of JAR 39, the CAA will cease to classify manufacturer’s Service Bulletins as mandatory and will issue Airworthiness Directives for products of UK design in accordance with JAR 39. Until this date, the existing procedures for classifying Service Bulletins as mandatory will be followed.

The CAA will continue to require automatic adoption of foreign Airworthiness Directives issued by the Civil Aviation Authority of the State of Design.

The European Aviation Safety Agency (EASA) becomes effective on 28 September 2003. As a result, most of the existing UK aircraft Type Certificates will be transferred to EASA after this date along with the commensurate responsibilities for continued airworthiness. JAR-39 will be incorporated into the Implementing Rules of EASA. Accordingly, EASA will progressively take over the task of issuing Airworthiness Directives. This notice will be updated as required to reflect the change of responsibilities and procedures to be followed as they occur.

3 PROCEDURES

3.1 Products, parts and appliances of UK Design

3.1.1 The CAA will publish Airworthiness Directives issued in accordance with JAR 39 for products, parts and appliances of UK design in CAP 476, Mandatory Aircraft Modifications and Inspections Summary.

NOTE: Mandatory Modifications or Airworthiness Directive numbers associated with Mandatory Service Bulletins issued prior to 1 July 2003 remain effective and will continue to be published in CAP 476.

3.1.2 Where urgency dictates that a short timescale is required to address an unsafe condition, the CAA will issue an Emergency Airworthiness Directive. The Emergency Airworthiness Directive will be sent to all owners and operators of affected UK registered aircraft.

3.1.3 The CAA will continue to advise the Responsible Authorities of ICAO Contracting States of any Airworthiness Directive or Emergency Airworthiness Directive issued for products, parts and appliances of UK Design.

3.2 Products, Parts and Appliances of Foreign Design

3.2.1 Foreign Airworthiness Directives

The CAA will continue to require automatic adoption of Foreign Airworthiness Directives issued by the Civil Aviation Authority of the State of Design unless notification by the CAA is made to the contrary.

CAA publishes these Airworthiness Directives for Products, Parts and Appliances not of UK design in CAP 474 Foreign Airworthiness Directives Volume III.

The CAA will send Foreign Emergency Airworthiness Directives issued by the Civil Aviation Authority of the State of Design to all owners and operators of affected UK registered aircraft.

NOTE: Airworthiness Directives for Products, Parts and Appliances of USA design are published directly by the FAA.

3.2.2 CAA Airworthiness Directives

Prior to 1 July 2003 these Airworthiness Directives were known as CAA Additional Airworthiness Directives. All Additional Airworthiness Directives published prior to 1 July 2003 remain effective.

The CAA may vary the content or applicability of a Foreign Airworthiness Directive, in which case details will be promulgated in a CAA Airworthiness Directive. Where the CAA has issued an Airworthiness Directive in advance of the notification by the Civil Aviation Authority.
Authority of the state of design, the CAA Airworthiness Directive shall be observed, unless subsequently revoked.

CAA Airworthiness Directives are also issued to address an unsafe condition which has been identified for aircraft operating on the UK register which are not the subject of an Airworthiness Directive issued by the Civil Aviation Authority of the State of Design.

These CAA Airworthiness Directives are published in CAP 473 – Foreign Airworthiness Directives Volumes I and II for Products, Parts and Appliances of USA Design and CAP 474 Foreign Airworthiness Directives Volume III for Products, Parts and Appliances not of USA Design.

NOTE: Both CAP 473 and 474 contain web site and postal addresses where Foreign Airworthiness Directives may be obtained from.

4 RESPONSIBILITY OF OWNERS/OPERATORS AND INDIVIDUALS/ORGANISATIONS CARRYING OUT MAINTENANCE AND OVERHAUL.

4.1 In order to ensure that an aircraft is in compliance with any applicable Airworthiness Directive, it is incumbent on owners and operators to ensure that they are aware of, or are in receipt of, any Airworthiness Directives issued by the Civil Aviation Authority of the state of Design or any applicable CAA Airworthiness Directives.

4.2 In addition, organisations or individuals undertaking maintenance and overhaul must also ensure that they are in receipt of Airworthiness Directives issued by the Civil Aviation Authority of the State of Design or applicable CAA Airworthiness Directives for the Products, Parts and Appliances which they maintain or overhaul.

NOTE: When an individual or organisation maintains or overhauls Products, Parts and Appliances for an owner/operator whose state of registry is not listed in the foreword to CAP 474, the individual/organisation must make arrangements with that owner/operator to receive any Airworthiness Directives issued by the Civil Aviation Authority of the state of registry.

5 REPETITIVE INSPECTION

5.1 Non Commercial Air Transport

5.1.1 Where an Airworthiness Directive has a repetitive periodicity of not exceeding 24 hours elapsed time the CAA may invoke the authorisation detailed in paragraph 5.1.3. If invoked, the text of the Airworthiness Directive will prescribe the authorisation.

5.1.2 When a Foreign Airworthiness Directive has the following or similar clauses in the text:

(a) a repetitive inspection periodicity of not exceeding 24 hours elapsed time;
(b) a clause/paragraph which allows the pilot to carry out the inspection;

the authorisation contained in paragraph 5.1.3. may be used.

5.1.3 The Civil Aviation Authority (CAA) in exercise of its powers under Article 12(8) (d) of the Air Navigation Order 2000 as amended, hereby authorises, a pilot, as a person competent to issue a Certificate of Release to Service in respect of a mandatory inspection required by an Airworthiness Directive where the inspection recurs at periods not exceeding 24 hours elapsed time, subject to the following conditions:

The pilot must hold a Group or Type rated licence applicable to the type quoted in the inspection.

(a) The pilot must have sufficient technical knowledge and have received specific training to provide that person with the competence to accomplish the inspection which may also require the use of simple visual inspection aids.

(b) The specific training must be provided by an appropriately licenced aircraft maintenance engineer or organisation approved by the CAA for that purpose.

5.1.4 When certifying an inspection in accordance with paragraph 5.1.3 the certifying signature will be that of the pilot followed by his or her licence number.
5.2 Commercial Air Transport

5.2.1 The provisions of paragraph 5.1 above cannot be used for repetitive inspections on aircraft operated for Commercial Air Transport. All certifications must be made by persons authorised by an organisation approved under JAR-145.

5.2.2 A JAR-145 organisation, in accordance with JAR 145.30[i](4) and JAA Administration and Guidance Temporary Guidance Leaflet 38, may authorise suitably qualified pilots to issue a certificate of Release to Service in respect of a mandatory inspection required by an Airworthiness Directive when the inspection recurs at periods not exceeding 24 hours elapsed time as defined in paragraph 5.2.1, subject to the following conditions:

(a) The pilot must hold a Group or Type rated licence applicable to the type quoted in the inspection.

(b) The pilot must have sufficient technical knowledge and have received specific training to provide that person with the competence to accomplish the inspection which may also require the use of simple visual inspection aids.

5.2.3 When certifying an inspection in accordance with paragraph 5.2.1, the certifying signature will be that of the authorisation reference issued by the JAR-145 organisation.

6 CHANGES TO FLIGHT MANUALS OR PERFORMANCE SCHEDULES

Where an Airworthiness Directive introduces a change to an aircraft Flight Manual or Performance Schedule, the introduction of the Change into the appropriate document shall be the responsibility of the Owner/Operator of 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 manufacturer’s temporary revisions complementary to the Airworthiness Directive.

NOTE: In addition to introducing a copy of the Airworthiness Directive into the Flight Manual, owners/operators must ensure where a Permission has been granted to utilise an Operations Manual in lieu of the Flight Manual, that the information promulgated in the Directive is transmitted into the Operations Manual within the compliance time specified in the Directive.

7 VARIATION TO AIRWORTHINESS DIRECTIVE COMPLIANCE TIMESCALE

7.1 Aircraft owners, operators and contracted maintenance organisations, must assess all Airworthiness Directives relating to relevant aircraft types and initiate early requisition and/or provision of aircraft parts and/or maintenance resources to meet the Airworthiness Directive compliance timescales.

7.2 Any application to vary an Airworthiness Directive compliance timescale will be assessed by the CAA on a case by case basis. The applicant, normally supported by the organisation responsible for the type design, must demonstrate, to the satisfaction of the CAA, an equivalent level of safety. Variations of this nature are intended to be used in exceptional circumstances which could not reasonably have been foreseen by the owner, operator or contracted maintenance organisation.

8 AIRWORTHINESS DIRECTIVE ‘ALTERNATIVE MEANS OF COMPLIANCE’

A variation to an Airworthiness Directive by means of an ‘alternative means of compliance’ will be assessed by the CAA on a case by case basis and the applicant, normally supported by the organisation responsible for the type design, must demonstrate, to the satisfaction of the CAA, an equivalent level of safety.

9 CANCELLATION

Painting of Aircraft

1 APPLICABILITY This Airworthiness Notice is applicable to all UK registered aircraft issued with a Certificate of Airworthiness.

2 INTRODUCTION Experience has shown that a greater degree of control has to be exercised over the painting of aircraft exteriors. The term painting in this context embraces the associated processes of stripping and such terms as refinishing and refurbishing.

3 COMPLIANCE

3.1 All aircraft defined in paragraph 1 which are to have their external finish substantially altered, shall comply with the requirements of this Notice.

3.2 The Owner, operator or the Approved Maintenance Organisation must assess the proposed task for its airworthiness implication, taking into account the aircraft manufacturers published requirements and precautions in addition to the content of paragraph 6, and make a decision as to the need for a Certificate of Release to Service (CRS). Owners and operators should consult their Approved Maintenance Organisation prior to making such a decision.

3.3 When a CRS is judged to be necessary, the signatory to the CRS will take responsibility for the whole process and should, therefore, assess the extent of the work to establish the need to:-

(a) Carry out on-site supervision including stage inspections.
(b) Brief the work force to avoid any airworthiness hazard, particularly where significant problems could be concealed by subsequent work processes.
(c) Ensure that any task carried out is adequately defined by documented process specification containing sufficient information to control the procedure.
(d) Ensure that all necessary guidance material, including the aircraft manufacturers’ published data and the paint manufacturers’ instructions are provided.
(e) Anticipate potential problems resulting from partial restoration which could mean additional paint weight in significant areas and the need for balancing of control surfaces.
(f) Make provision to rectify any corrosion detected following paint removal.
(g) Ensure the restoration of corrosion inhibiting compounds where washing or use of solvents or other paint removal techniques may have removed them in areas adjacent to those being repainted.
(h) Determine the basic weight and corresponding centre of gravity position.

NOTE: It may benefit the owner to anticipate any scheduled structural inspections including Non-Destructive Inspections, which could be better accomplished following the paint removal.

4 REQUIREMENT When the need for a Certificate of Release to Service has been judged necessary under paragraph 3 of this Notice, for an aircraft which has been externally painted or had some significant change to its finish, such as paint removal and subsequent pol-
lishing, then a Certificate of Release to Service must be issued upon completion of the process (see paragraph 6).

5 CERTIFICATION OF RELEASE TO SERVICE

5.1 The Authority will not grant specific Approval for painting of aircraft. Therefore, specialist painting organisations will not be entitled to issue any certification in respect of the airworthiness status of an aircraft following painting, unless the organisation holds an appropriate CAA Organisation Approval.

5.2 A licensed aircraft engineer holding the relevant Category ‘A’ LWTR for the class of aircraft, with any Type Rating in the appropriate sub-paragraph of Airworthiness Notice No. 10 Paragraphs 4, 5 or 7, has authority to issue a CRS for the satisfactory completion of the external finish.

5.3 Any other signatory would require direct CAA authorisation, or would need to be an authorised inspector within an organisation such as the British Gliding Association.

6 ADDITIONAL INFORMATION

6.1 Examples of likely damage and hazards that must be avoided include:-

(a) Damage caused during preparation work which could adversely affect the structural integrity of the aircraft, such as:-
   • Reduction in fastener head size by uncontrolled use of power tools and abrasive media.
   • Surface scratching by use of paint scrapers.
   • Degrading of composite or plastic surfaces by abuse of particle blasting techniques.
   • Aluminium surface contamination by steel wool particles.
   • Use of incorrect chemical paint strippers.

(b) Damage to transparencies, composites and sealants by solvent and paint removers, due to inadequate protection and/or the retention of these products in crevices.

(c) Inadvertent deletion of placards and markings, failure to renew them, or failure to comply with the required specification for, e.g. Registration Marks, mandatory door markings and break in zone identification.

(d) Blockage of vents, drains and other openings by debris, masking tape and residues of paint remover, paint or particle blast material. The possible ingress of water into fuel tanks through vent apertures or past filler cap seals when using high pressure hoses for washing down.

(e) Loss of correct mass balance moments on flight control surfaces.

(f) Uncontrolled variations to aircraft basic weight.

(g) Variation to surface profile and aerodynamic smoothness at critical points such as surface leading edges, by the uncontrolled use of fillers or excessive paint thickness.

(h) Inadequate knowledge of the manufacturers’ finishing schemes for antennas and radomes.

(i) Overly aggressive paint stripping which could damage the sealant around air data ports/orifices on RVSM compliant aircraft. Air flow over these areas is critical for the height keeping capability of the aircraft.

(j) For fabric coverings, special procedures which ensure proper adhesion and protection from the effects of ultra-violet light. Aggressive removal of the old finish may cause fabric damage. The exposed fabric should be assessed for its serviceability prior to refinishing. The advice published by the manufacturer of synthetic fabric would have to be made available and complied with in full as well as that of the aircraft manufacturer.
(k) The effects of excessive paint thickness on the application of non-destructive testing techniques using eddy current and ultrasonic methods.
(l) Jamming of flight control and landing gear mechanisms by preparation treatments and paint.

6.2 Examples of finishing work that would require the issue of a CRS:
(a) Complete repainting from bare metal or fabric, or overcoating an existing finish.
(b) Reversion from paint finish to polished metal.
(c) Repainting or reversion to bare metal on flying control surfaces or supercritical lifting surfaces.
(d) Extensive polishing of bare metal finish using abrasive polishes where skin thickness or fastener head dimensions are critical, particularly where polishing is to be a repetitive requirement.
(e) Finishing of radomes, antennas and composite materials used in Primary and Secondary structure.
(f) Painting in areas involving critical orifices or mandatory markings.
(g) Any alteration to the finish of Helicopter main rotor and tail rotor blades or any other critical parts.

NOTE: (1) It is not intended that the requirement for the issue of a CRS should include minor repairs to surface finish where airworthiness implications are minimal.
NOTE: (2) The above list of examples is not intended to be exhaustive.

6.3 It is recommended that aircraft issued with a Permit to Fly should be subject to the same principles of compliance with this Notice, although there is no legal requirement for the issue of a Certificate of Release to Service.

6.4 Operators and maintenance organisations are reminded that the use of self adhesive decals as an alternative to painting may totally preclude both visual and eddy current inspections. Operators and maintenance organisations need to address the impact on structural inspection tasks when using such decals and ensure that the aircraft maintenance programme requires their removal at the appropriate time.

6.5 CANCELLATION This Airworthiness Notice cancels Airworthiness Notice No. 38, Issue 3, dated 16 March 1998, which should be destroyed.
The Selection And Procurement Of Electronic Components

1 INTRODUCTION

The selection and procurement of electronic components for use within aircraft equipment or for direct fitment to airframes continues to present problems for those concerned with airworthiness procedures for Civil Aircraft. This Notice prescribes how the relevant British Civil Airworthiness Requirements (BCAR) should be applied in order to achieve design and quality control of equipment and components.

2 DEFINITION

2.1 The term Electronic Components, as interpreted by the BSI and other agencies, may include such items as micro-switches or electrical connectors which are likely to be fitted directly to an airframe. More conventionally the term Component also refers to parts such as capacitors and resistors which have no method of mounting other than by the soldered electrical connections. The application of such terms is usually within an equipment which itself is approved for installation in an aircraft.

2.2 For the purpose of this Notice such items are referred to as:

(a) **Aircraft Components**, for items fitted directly to airframe or engine, and

(b) **Component Parts**, for items fitted within equipment. BCAR Chapter A4-8 gives further definition of the terms used in this Notice.

3 DESIGN RESPONSIBILITY

3.1 **Aircraft Components** The requirements for electrical aircraft components are given in BCAR Chapter A4-8 and JAR 25.1351 to 25.1363, the installation requirements of electrical items is further considered in BCAR Section D6-1.

3.2 For the correct interpretation of this Notice it is important to understand the significance of the terms ‘Controlled’ and ‘Uncontrolled’ as applied to electrical components. For items used as Aircraft Components as defined here, the known or probable use will determine the approval category and, for Controlled Items, the requirements of paragraph 5 of BCAR Chapter A4-8 will need to be followed as appropriate. The term ‘Uncontrolled’ relates solely to the status of items in their functional role in an aircraft and does not imply that such components may be ignored. Paragraph 2 of BCAR Chapter D6-1 requires those designing installations to consider the suitability of ‘Unclassified parts and Equipment’ and, where necessary, these ‘shall be controlled ..... to a standard to ensure compliance with the relevant requirements of ...... Section D’. Thus the design and build standard of the ‘Uncontrolled Item’ may still be subject to a measure of control under the CAA procedures prescribed in this Notice to ensure that no new unassessed failure modes are introduced.

3.3 The selection and use of Aircraft Components is normally the responsibility of an Approved Organisation with appropriate Terms of Approval under BCAR Section A procedure. Such organisations need to satisfy themselves, and ultimately the CAA, as to the suitability of an equipment in a given application. This is most conveniently done by obtaining a Declaration of Design and Performance (DDP) to a format based upon that given in BCAR Chapter A4-8 paragraph 7, BS 3G100 Part 1 or ISOR224. The authorisation of the DDP by an Approved Signatory within an Approved Organisation and its acceptance by the user constitutes
Approval under Component Procedures. If the design authority for an equipment additionally obtains approval for their product from the CAA then the equipment is said to be ‘Accessory Approved’. It is important to note, however, that ‘Accessory Approval’ does not absolve the user from ensuring that the item to be used as an Aircraft Component is suitable for the particular application.

3.4 The assurance that the products obtained are as declared on the DDP is a function of a clearly defined purchase order requiring ‘CAA Release’. (See paragraph 5) In the context of this Notice it is essential that users appreciate that generalised claims that an item is approved can only relate to the conformity with specifications, compliance with which may, or may not, have been validated by a third party. Approval for aircraft use is a function of selection by an authorised Design Authority who will, in effect, approve the application of the item.

4 COMPONENT PARTS – SELECTION

4.1 The designer of a piece of equipment which utilises individual component parts has freedom of choice in the matter of selection provided that the equipment taken as a whole meets its design specification and the relevant Airworthiness Requirements. The Requirements of BCAR Chapters A4-1, A4-2 and A4-3 have to be satisfied and this establishes the need for control of the identification, reliability and modification standard of component parts. Users and overhaulers of equipment need to be able to procure component parts which will maintain the established and accepted reliability of the total equipment. It follows that all necessary information regarding special testing, selection or condition of component parts shall be given in Overhaul Manuals.

4.2 Items produced to BS 9000 Specifications may well be suitable if the defined level of quality is compatible with the declared reliability for the total equipment, as further noted in paragraph 7.

5 USER RESPONSIBILITY

5.1 Users and overhaulers of equipment are responsible for showing compliance with the requirements of BCAR Chapter A4-2 when obtaining replacement ‘component parts’ as stated in paragraph 4 of this Notice. It is emphasized that overhaulers of equipment are required to obtain authorisation before making substitutions or in any way deviating from the spares or replacements listed in the relevant Approved Overhaul or Maintenance Manuals of a ‘controlled’ item of equipment. In all cases of difficulty in procurement of the items referred to in Approved Manuals, the acceptance of alternatives must include authorisation by an appropriate Design Organisation.

5.2 BCAR Chapter A4-8 paragraph 6.1 provides guidance on the control of quality of components obtained from overseas suppliers and Airworthiness Notice No. 11 relates to Acceptance of Aeronautical Parts.

6 THE APPROVED CERTIFICATE

6.1 Users are reminded that the function of an Approved Certificate issued by a CAA Approved Organisation (who will hold an Approval Number DAI/ xxxx/ xx or AI/ xxxx/ xx) is intended to ensure that the purchaser obtains the items which are ordered. The use of an Approved Certificate does not automatically confer any ‘CAA Approval’ status on the product and it is the responsibility of the purchaser to reference the required part or drawing number on his order, together with any other necessary definition. The issue of a proprietary item on an Approved Certificate indicates that the producing organisation is approved and that appropriate CAA procedures have been followed, and will be followed in the event of any subsequent enquiry. It is apparent, therefore, that it is not necessary for products to be Design Approved by the CAA before they are released unless this is a condition of the order.
6.2 Purchasers should note that airworthiness procedures are applicable to airborne equipment and requests for 'CAA release' should be restricted to items which fall within the requirements of BCARs and where, therefore, the release has significance.

7 BS 9000 ELECTRONIC COMPONENTS OF ASSESSED QUALITY

Users proposing to accept components supplied to any form of BS 9000 specification or other specification systems employing similar formats should note and understand the assured quality aspect which is employed. Statistical sampling techniques essentially involve an element of risk which is determined by the Acceptance Quality Level (AQL) and sampling plans referenced in the specifications. The CAA will expect users of BS 9000 components to hold copies of specifications concerned and to be in a position to appreciate the significance of the quality assurance techniques employed in these and other specifications involving sampling techniques.

8 CANCELLATION

This Notice cancels Airworthiness Notice No. 39, Issue 4, dated 16 September 1988, which should be destroyed.
Carbon Monoxide Contamination In Aircraft

1 All concerned are warned of the possibility of dangerous carbon monoxide concentrations in aircraft. All aircraft types may be affected, but this Notice relates mainly to light aircraft.

**NOTE:** Carbon monoxide (CO), a poisonous gas, is a product of incomplete combustion and is found in varying degrees in all smoke and fumes from burning carbonaceous substances. It is colourless, odourless and tasteless.

2 The two main sources of contamination are:

2.1 Modifications, such as those involving the introduction of additional openings in the fuselage or the removal of windows and doors, e.g. for camera installations or parachutists: in future, before approval can be given for such modifications, aircraft must be tested to ensure that the cockpit/cabin is free from unacceptable concentrations. Aircraft modified in accordance with an approved scheme must also be subjected to a similar test.

2.2 Defective heating systems of the type which utilise an exhaust heat exchange: physical inspections of such systems should be carried out according to the manufacturer’s instructions at the intervals specified and whenever carbon monoxide contamination is suspected.

3 Other possible sources of contamination are:

3.1 Apertures in fire walls of single-engined aircraft, ineffective seals at fuselage strut attachments, defective exhaust manifold slip joints, exhaust system cracks or holes, discharge at engine breathers, defective gaskets in exhaust system joints and faulty silencers: aircraft should be carefully examined for defects of this nature during routine inspections, which should occur at sufficiently regular intervals.

3.2 Exhaust from other aircraft during ground holding and taxying: the obvious precaution in this case is that ground holding and taxying should be carried out clear of the exhaust area of preceding aircraft.

4 The CAA’s nearest Regional Office (see Airworthiness Notice No. 29, Appendix 2) should be contacted in cases where the presence of carbon monoxide is suspected and a test for concentration is considered desirable.

5 **CANCELLATION** This Notice cancels Airworthiness Notice No. 40, Issue 1, dated 1 November 1966, which should be destroyed.
1 INTRODUCTION

1.1 The previous issues of this Notice referred to investigations of a fatal accident to a large transport aircraft which had revealed that the flight crew may have been suffering from carbon monoxide poisoning brought about by the gas escaping from combustion heaters or their associated exhaust systems.

NOTE: Carbon monoxide (CO), a poisonous gas, is a product of incomplete combustion and is found in varying degrees in all smoke and fumes from burning carbonaceous substances. It is colourless, odourless and tasteless.

1.2 Fitment of oversize nozzles to combustion heaters will increase the concentration of carbon monoxide in the exhaust gases and may cause operating difficulties with the heater. Therefore it is imperative that only nozzles of the type quoted by the manufacturer are fitted and that servicing, overhaul and inspection standards of combustion heaters and their associated exhaust systems are maintained at a high level.

1.3 This Notice has been raised to Issue 9 in order to accommodate a revision instruction related to ICAO definitions.

2 SERVICING AND OVERHAUL

The requirements of this paragraph 2 are applicable to all aircraft whether maintained to an approved Maintenance Schedule or not.

2.1 Except where otherwise agreed by the CAA, servicing, overhaul and inspection of combustion heaters and their associated exhaust systems shall be in accordance with the instructions contained in the appropriate manuals produced by the aircraft manufacturer and the equipment manufacturer. If the instructions in the aircraft manufacturer’s manual differ from those in the equipment manufacturer’s manual, those of the aircraft manufacturer shall be assumed to be overriding.

2.2 In addition to compliance with the provisions of the approved Maintenance Schedule and appropriate instructions, compliance shall (unless already accomplished in the course of aircraft maintenance) also be shown with (a) and (b), at intervals not exceeding 500 heater operating hours or two years, whichever is the sooner (but see paragraph 2.3).

(a) Combustion heaters and their exhaust systems shall be completely dismantled and inspected, and restored to the extent necessary to ensure continued safe operation. Combustion chambers shall, in addition, be pressure tested.

(b) The hot air outlet ducting adjacent to the heater shall be inspected for exhaust contamination and the appropriate action shall be taken where there is any evidence of contamination.

2.3 Unless equipment which records heater operating hours is installed, it must be assumed that heater hours are equal to aircraft flying hours; or some percentage of flying hours that has been agreed with the CAA. Applications for the agreement of a flying hour percentage should be made to the CAA, Safety Regulation Group, Gatwick.
3 MAINTENANCE SCHEDULE AMENDMENT
Appropriate ‘B’ amendments must be submitted by all holders of CAA Approved Maintenance Schedules affected by these revised requirements.

4 Proprietary carbon monoxide detectors are available. Whilst the use of such detectors may be an aid to the detection of carbon monoxide contamination in aircraft, their use is not considered to be a satisfactory substitute for the procedure detailed in this Notice.

5 CANCELLATION
This Notice cancels Airworthiness Notice No. 41, Issue 8, dated 2 October 1981, which should be destroyed.
1 INTRODUCTION

1.1 CAA have become aware of a number of occasions where a lack of adequate control of Field Loadable Software (FLS) by operators has given rise to safety related occurrences.

1.2 The purpose of this Airworthiness Notice is to provide guidance for operators and maintenance organisations on the configuration management, procurement, embodiment and tracking of aircraft Field Loadable Software to ensure continued airworthiness and operating safety standards are met.

1.3 The content of this notice is based upon established as well as developing international standards. It is the intention of JAA to subsume the production of Loadable Software Aircraft Part (which include some databases) into the JAR-21 subpart G approval process. When this occurs this Airworthiness Notice will be amended as necessary.

2 BACKGROUND

2.1 This Notice identifies what aircraft Field Loadable Software is required to be controlled and provides guidance on achieving this. It is recognised that operators and maintenance organisations may have already implemented satisfactory alternatives that meet the intent of this Notice. It will not be necessary for those organisations to change these procedures.

2.2 Recommended Reference Material:

<table>
<thead>
<tr>
<th>USA</th>
<th>Europe</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>RTCA DO 178B</td>
<td>EUROCAE Doc. ED 12B</td>
<td>Software Considerations in Airborne Systems and Equipment Certification</td>
</tr>
<tr>
<td>RTCA DO 201A</td>
<td>EUROCAE Doc. ED 77</td>
<td>Standards for Aeronautical Information</td>
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<tr>
<td>RTCA DO 200A</td>
<td>EUROCAE Doc. ED 76</td>
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<tr>
<td>RTCA DO 236A</td>
<td>EUROCAE Doc. ED 75A</td>
<td>Minimum Aviation System Performance Standards (MASPS): Required Navigation Performance (RNP) for Area Navigation</td>
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3 DEFINITIONS

3.1 For the purpose of this Airworthiness Notice the following definitions apply:

(a) Aircraft Configuration List (ACL): A list of Line Replaceable Units (LRU) and modules with Loadable Software Airplane Part (LSAP) that are applicable to a specific aircraft. This list may be contained on a drawing supplied by the Type Certificate Holder, in a Service Bulletin, Service Information Letter, IPC or separate tracking system.
(b) Field Loadable Software (FLS): Software, including data tables, which can be loaded without removing the system or equipment from its installation. For example it is software that can be loaded on an aircraft by a maintenance mechanic/technician.

(c) Loadable Software Aircraft Part (LSAP): FLS that is considered to be part of the aircraft approved design and therefore an aircraft part requiring release documentation (JAA Form One, FAA 8130-3) or an equivalent agreed with CAA.

(d) Databases: FLS in database form e.g. Navigational Data Base (NDB), Terrain/Airport Database (TDB), Model/Engine Database (MEDB) containing information such as navigation, route, engine performance and Terrain used by the Flight Management Computer (FMC), Terrain Awareness Warning System (TAWS) etc to accomplish aircraft navigational and manoeuvring tasks.

(e) Software Media: Device that contains a copy of the software such as a diskette, (Personal Computer Memory Card International Association) PCMCIA card, CD ROM, Onboard Replaceable Modules (OBRM), file servers or portable data loaders.

(f) Target Hardware: The hardware such as Line Replaceable Units (LRU) and modules that is intended to be loaded with new FLS.

(g) User Modifiable Software (UMS): Software declared by the aircraft Type Design Organisation as being intended for modification by the aircraft operator usually without review by the CAA, the aircraft Type Design Organisation or the equipment manufacturer.

(h) Electronic Distribution of Software (EDS): A process whereby FLS is moved from the producer or supplier to a remote site (generally the operator) without the use of a physical media.

4 TARGET HARDWARE

**NOTE:** The following list contains typical examples, it is recognised that due to the wide range of aircraft configurations the list is not exhaustive.

4.1 Typical Target Hardware for LSAP:
- Display Electronics Unit (DEU)
- Flight Management Computer (FMC)
- Flight Control Computer (FCC)
- Digital Flight Data Acquisition Unit (DFDAU)
- Digital Flight Data Acquisition Management Unit (DFDAMU)
- Auxiliary Power Unit (APU) Electronic Control Unit (ECU)
- Electronic Engine Control (EEC)

4.2 Typical Target Hardware for Databases:
- Enhanced Ground Proximity Warning System (EGPWS)
- Flight Control Computer (FCC)
- Flight Management Computer (FMC)

4.3 Typical Target Hardware for UMS:
- Aircraft Communication and Reporting System (ACARS)
- Aircraft Condition Monitoring System (ACMS)
- SATCOM
- In-Flight Entertainment System (IFE)

5 FIELD LOADABLE SOFTWARE (FLS) PROCUREMENT AND DOCUMENTATION

5.1 LSAP, Databases and UMS are firstly delivered with the new aircraft and contained in the Target Hardware and in media sets in binders or storage bins. It must be realised however, that the part number of Target Hardware does not necessarily indicate the loaded software part number, this aspect needs to be borne in mind when replacing affected LRUs.
5.2 Loadable Software Aircraft Part (LSAP):

Procured LSAP must be obtained from an approved source using the part number specified and be accompanied by a JAA Form One or FAA 8130-3. These can typically be found in documents such as the Illustrated Parts Catalogue (IPC), Service Bulletin, Service Letter or Approved Modification.

5.3 Databases:

Software updates such as NDB, TDB and MEDB should be acquired from a source that is acceptable to the Target Hardware Manufacturer and accompanying documentation and Transport Storage Media containing the modified software should clearly identify this. The Transport Storage Media should also be annotated with the originator identification and quality/conformity markings. The responsibility of obtaining appropriate documentation confirming the authenticity, performance specification and accuracy of the software rests with the operator. It is also recommended that a “confidence” check of the received navigation/performance data be accomplished to ensure that the changes made satisfy their intended use.

5.4 User Modifiable Software (UMS):

UMS is normally generated by the operator, their contracted maintenance organisation or approved vendor. The responsibility for obtaining adequate documentation confirming the appropriateness of the software rests with the operator.

5.5 Electronic Distribution of Software (EDS):

EDS is increasingly being utilised to transfer FLS from the supplier to an operator. The obvious advantages of this are the speed of distribution and the removal of the need for physical transport media. This should be accomplished to a standard acceptable to CAA. It is also recommended that a “confidence” check of the received navigation/performance data be accomplished to ensure that the changes made satisfy their intended use.

6 FLS STORAGE MEDIA HANDLING

6.1 In order to ensure FLS and Storage Media reliability, Storage Media should be sealed in dust and lint free material in a closed box, be clearly labelled as containing software media and the following avoided:

- Moisture, dust or airborne contaminants.
- Magnetic fields.
- Direct sunlight for prolonged periods.
- Rate of temperature change greater than 20°C/hour.
- Temperature outside the range of -20° to +50° C.
- X-ray
- Magnetic or electro-magnetic source.

FLS and Storage Media known to contain defects should not be used and should be placed in quarantine for suitable disposal.

7 FLS LOADING AND CERTIFICATION

7.1 FLS is loaded into the Target Hardware using a portable data loader (PDL), airborne data loader (ADL) or off aircraft data loader (workshop). After loading, the software should be verified on board using the established processes and procedures detailed in the maintenance manual or associated approved maintenance or modification data.

7.2 Any FLS loading should be recorded in the Aircraft Configuration List (ACL), and a copy kept on board the aircraft with a further copy also kept in the operators aircraft maintenance records system.

7.3 After any loading of LSAP a Certificate of Release to Service must be issued by an appropriately authorised Line/Base Maintenance Certifying Technician/Mechanic.
8 REPLICATION OF FLS

8.1 If LSAP copies are to be made this should be accomplished using the aircraft type design organisation approved FLS Storage Media replication process. This replication should be recorded in an Aircraft Software Replication Register and be traceable to the original source from which copies were made. This is to ensure that this activity can be audited.

8.2 A copy of the original JAA Form One, FAA 8130-3 or accepted release documentation, as appropriate, should accompany all LSAP Storage Media containing software copy.

9 PROCEDURE

9.1 It is essential that operators have appropriate procedures in place such that at any time it is possible to determine the equipment and software configuration of each aircraft in their fleet.

9.2 Operators involved in the procurement, modification and embodiment of FLS shall produce a documented procedure within their Company Procedures, Maintenance Management Exposition (MME) or equivalent that describes their means of compliance with this Notice. It is expected that the procedure would cover the complete cycle from procurement specification, distribution methodology (e.g. EDS, media type etc.), receipt inspection/assessment through to embodiment, subsequent testing and release to service. This process should also be included in the internal audit programme.

9.3 There are instances when a change to UMS may modify aircraft performance information presented to the flight crew, in such cases CAA advice should be sought as approval may be required.

9.4 Operators are required to ensure that competent staff are retained in order to ensure that the intent of this Notice is met.

NOTE: Documents referenced in this Notice can be obtained from:
EUROCAE, 17 Rue Hamelin, 75783 Paris, France. Fax No. Web site: www.eurocae.org

10 CANCELLATION This Airworthiness Notice cancels Airworthiness Notice No. 43, Issue 1, dated 22 March 2002, which should be destroyed.
Gas Turbine Engine Parts Subject To Retirement Or Ultimate (Scrap) Lives

1 The design of gas turbine engines in service is such that certain critical parts, notably compressor and turbine discs, experience cyclic variations of stress as a result of mechanical and thermal effects which are of sufficient magnitude to result in fatigue damage. The failure of these parts can result in damage to the aircraft since under operating conditions they may possess more energy than can be absorbed by the surrounding engine structure. It is therefore necessary to limit the life of all critical parts in order to prevent fatigue damage developing into complete failure. As fatigue damage is not detectable by current inspection techniques until cracking has begun, and because crack propagation to the point of failure can be unacceptably rapid, a safe life for each critical part will have been established and approved as part of the certification procedure.

2 These safe lives, also referred to as retirement lives, ultimate lives, scrap lives and low cycle fatigue (LCF) lives, are mandatory limits which must never be exceeded. They are required by BCAR Section A, Chapter A5-3 and Section B, Chapter B5-3 to be published, in the Engine Manuals, for all engines. Manufacturers also publish this information variously in Service Bulletins, Service Memoranda, Notices to Operators, Maintenance Manuals, etc., for the benefit of operators and engine overhaul agencies. It may be possible to extend the published lives as a result of further testing, and this is normally indicated in the publications as an aid to spares provisioning, but such amendments must be approved.

3 The Inspection and Test Certificate of an engine issued by a manufacturer or overhaul agency is required to include reference to a certified statement in which is recorded the life consumed, up to the time of release, by each of the life-limited parts fitted in the engine. This statement is normally included in the engine log book, but may be included in any other document which has been approved as an alternative for a particular operator.

4 Each operator is responsible for ensuring that parts fitted to the engines being operated do not exceed the published lives. Therefore accurate up-to-date records of the life consumed by each engine are required to be maintained, and this may involve recording flying hours, number of landings, ‘touch and go’ landings and take-offs, air re-starts, etc., dependent upon each manufacturer’s definition of a unit of life. In order to preserve continuity of the records, an up-to-date statement of the life consumed since last release must accompany each engine when despatched by an operator to an overhaul agency for repair, modification and partial or complete overhaul.

5 When a new type of aircraft fitted with a UK manufactured turbine engine is first introduced into service the operator is responsible for determining a ‘typical flight cycle’, described in engine terms, applicable to its operation. This should be done by sufficient monitoring of service flights, and as necessary training flights, to provide an adequate knowledge of actual engine flight profiles. If these appear to be in any way more severe than those assumed by the engine manufacturer, the operator shall inform the engine manufacturer and the CAA. Amended approved lives will be published if necessary.
NOTE: (1) As differences between winter and summer operation, and differences in the installed position of engines in the aircraft may make significant difference to the usage experienced, these factors should be taken into account in the monitoring programmes. Also because auto-throttle and auto-land systems can affect the envelope of engine speeds used, it is important that any changes to the characteristics of such systems are assessed.

NOTE: (2) BCAR Section A Chapter A5-3 and Section B, Chapter B5-3 require the engine manufacturer to publish, in the engine manuals, information concerning the engine flight profile assumed for the establishment of safe lives.

6 Each operator of an aircraft type (fitted with a UK engine) which he has not previously operated shall, during the first six months of operation, establish that his engines are being used within the flight profile published by the engine manufacturer. If there is any reason to believe that the flight cyclic fatigue usage may be more adverse than currently assumed, the operator shall inform the engine manufacturer and the CAA with a view to revision of the approved lives.

7 The CAA will, from time to time, review with UK engine manufacturers the total experience applicable to any engine/aircraft type. When this reaches a level at which the engine operation can be regarded as well established, the need for compliance with paragraph 6 will cease, and this will be stated in the engine manufacturers’ manual material dealing with this subject.

8 Additionally, all operators of UK manufactured engines will be required at yearly intervals to make a formal statement that:

(a) in respect of engines having been assessed under paragraph 6, there has been no change to their operation, engine handling, auto-throttle systems, thrust reverse drills, etc.

(b) in respect of engines covered by paragraph 7, they are permitting no procedures which would result in their engines operating outside the prescribed flight profile to an extent which could significantly affect fatigue life usage, unless an assessment by the engine manufacturer has shown any effect to be unimportant or allowed for by appropriate adjustment of lives.

9 Operators of engines manufactured outside the UK may find that the engine manufacturers’ manuals contain different information on this subject from that in manuals for UK engines. Operators must obviously comply with any instruction given, but are additionally advised to inform the engine manufacturer of any conditions of their operation which may be at variance with his instructions. The CAA will provide assistance if desired in obtaining the manufacturers’ assessment of the effects of operations on related lives.

10 CANCELLATION This Notice cancels Airworthiness Notice No. 44, Issue 6, dated 29 October 2001, which should be destroyed.
Software Management

1 INTRODUCTION

1.1 This Notice sets out additional requirements applicable to the certification and continued airworthiness control of software used in aircraft equipment and systems.

1.2 Extensive use is now being made in aircraft of software-based equipment and systems. Typically, software may be used in primary and secondary flight controls, engine controls, electrical generation and distribution, brakes, radio and navigation equipment, flight instruments, and automatic flight control. The software may have a direct influence on aircraft safety. Hence, in meeting the appropriate aircraft requirements and, for Controlled Items, the Requirements of BCAR Sections A or B, or JAR-21, it is necessary to investigate the software design and to control its certification and post-certification configuration in a manner equivalent to that for conventional safety-critical systems.

1.3 RTCA/EUROCAE document DO-178/ED-12, issued May 1982, entitled Software Considerations in Airborne Systems and Equipment Certification, provides guidance to aircraft constructors, equipment manufacturers and aircraft operators on software practices that would support the certification of software-based equipment and systems. This document is acceptable to the CAA as a basis for the certification of the software in aircraft equipment and systems.

2 REQUIREMENTS

2.1 General

2.1.1 In addition to the normal assessment of system criticality, the responsible Design Organisation (normally the aircraft constructor) shall assign a Software Criticality Category to each software-based equipment or system which shall relate to the severity of the effect of possible software errors within the equipment or system (see Appendix to this Notice). The Software Criticality Category assigned shall be agreed by the CAA.

2.1.2 Where the equipment is to be the subject of an application to CAA for Accessory Approval or Appliance Registration, as provided by BCAR Section A, Chapter A4-8 or A4-10, the level of Software Criticality Category shall be declared in the Declaration of Design and Performance.

2.1.3 Where the equipment or system is to be approved under the Component Procedure of BCAR Section A, Chapter A4-8 or, under the aircraft modification procedure of BCAR Section A, Chapter A2-5, the Software Criticality Category of the equipment or system shall be declared.

2.1.4 Details of equipment and system Software Criticality Categories should be provided to the aircraft operators to assist in the evaluation of post-certification modifications (see paragraph 2.3).

2.2 Initial Certification In respect of a software-based equipment or system, the responsible design organisation shall provide evidence to the CAA that the software has been

1. Obtainable from EUROCAE, 17 Rue Hamelin, 75116 Paris Cedex 16, France
designed, tested and integrated with the hardware in a manner which ensures compliance with BCAR Section A (see paragraph 3.1).

2.3 **Post-Certification Modifications** In respect of equipment and systems with software in the Major, Hazardous or Catastrophic Criticality Categories, a modification which affects software shall not be embodied unless it has been approved by the responsible Design Organisation (see paragraph 3.2).

3 **INTERPRETATION OF REQUIREMENTS**

3.1 **Initial Certification**

3.1.1 An applicant for the approval of a software-based equipment or system may use the guidance material given in document DO-178/ED-12¹ (or an agreed equivalent standard) as a means of securing CAA approval of the associated software.

3.1.2 A software Configuration Management Plan, e.g. as defined in Part 7 of document DO-178/ED-12¹, will be required as a means of software identification and change control to be effective throughout the life of the equipment. The plan will need to be managed by the responsible design organisation.

3.2 **Post-Certification Modifications**

3.2.1 Modifications to software will be subject to the same approval procedures as are applied to hardware modifications (see BCAR Section A, Chapters A2-5, A4-8 or A4-10 as appropriate). Modified software will need to be identified and controlled in accordance with the procedures stated in the Software Configuration Management Plan. The guidance material given in document DO-178/ED-12¹ (or an agreed equivalent standard) may be used as a basis for the approval of software modifications.

**NOTE:** The term maintenance is often used by software specialists when referring to modifications to software.

3.2.2 The CAA will require the design and investigation of a modification, including those proposed by the aircraft operator, to involve the support service provided by the design organisation responsible for the equipment or system. It is unlikely that an aircraft operator could justify the establishment of its own software design capability. Therefore, where the Software Criticality Category is Major, Hazardous or Catastrophic, the aircraft constructor would normally be the appropriate Design Organisation, although tasks may be delegated to equipment manufacturers or software organisations.

3.2.3 Aircraft operators will need to ensure that their normal procedures will report software problems to the responsible design organisation.

4 **IMPLEMENTATION** With effect from 1 November 1983, software in aircraft systems and equipment will be subject to the provisions of this Notice.

5 **CANCELLATION** This Notice cancels Airworthiness Notice No. 45, Issue 2 dated 29 October 2001, which should be destroyed.

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¹ Obtainable from EUROCAE, 17 Rue Hamelin, 75116 Paris Cedex 16, France
**Definition Of European Criticality Categories**

<table>
<thead>
<tr>
<th>Effect on aircraft and occupants of failure condition or design error</th>
<th>FAR 25.1309 and JAR 25.1309 definitions</th>
<th>Reduction of the aircraft capability or of the crew ability to cope with adverse operating conditions</th>
<th>Prevention of continued safe flight and landing of the aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAR 25.1309 and AMJ 25.1309 definition</td>
<td>No significant degradation of aircraft capability or crew ability</td>
<td>Slight reduction of safety margins, slight increase in workload, e.g. routine changes in flight plan, or physical effects but no injury to occupants</td>
<td>Slight reduction of safety margins, slight increase in workload, e.g. routine changes in flight plan, or physical effects but no injury to occupants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Significant reduction in safety margins, reduction in the ability of the flight crew to cope with adverse operating conditions impairing their efficiency, or injury to occupants</td>
<td>Large reduction in safety margins, physical distress or workload such that the flight crew cannot be relied upon to perform their tasks accurately or completely, or serious injury to or death of a relatively small proportion of the occupants</td>
</tr>
<tr>
<td>Criticality category AMJ 25.1309 definition</td>
<td>Minor</td>
<td>Major</td>
<td>Hazardous</td>
</tr>
<tr>
<td>Category of criticality RTCA DO-178</td>
<td>Non-essential</td>
<td>Essential</td>
<td>Critical</td>
</tr>
</tbody>
</table>
1 INTRODUCTION

1.1 Airworthiness Notice No. 45 was issued to give CAA recognition to RTCA/EUROCAE Documents DO-178/ED-12*, entitled, ‘Software Considerations in Airborne Systems and Equipment Certification’. The RTCA/EUROCAE Documents have been updated to reflect industry’s experience, and released under references DO-178B/ED-12B*. The rigid correlation required in DO-178/ED-12 between software verification effort and function criticality category has been relaxed. A more flexible approach, in which design techniques are permitted to influence the software verification effort for a given function criticality, is described in DO-178B/ED-12B, or later issues.

1.2 The purpose of this Airworthiness Notice No. 45A is to extend CAA recognition to the updated Documents and to restate the applicable requirements with appropriate guidance material. Airworthiness Notice No. 45 will continue to apply to systems and equipment for which DO-178/ED-12 was adopted.

1.3 RTCA/EUROCAE Document DO-178B/ED-12B, issued December 1992, entitled Software Considerations in Airborne Systems and Equipment Certification, provides guidance to aircraft constructors, equipment manufacturers and aircraft operators on software design and management practices. This document is acceptable to the CAA as a basis for the certification of the software in aircraft systems and equipment.

2 REQUIREMENTS

2.1 General

2.1.1 In addition to the normal assessment of system and/or function criticality, the responsible Design Organisation shall assign, to each software-based system or equipment, associated software levels which relate to the severity of the effect of possible software errors within the system or equipment (see Appendix 1 to this Notice). The software levels so assigned shall be agreed by the CAA.

2.1.2 Where the system or equipment is to be the subject of an application to CAA for approval as part of an engine or propeller, as provided by BCAR Sections A or B, Chapters A/B4-2 or A/B4-4, the software levels of the system or equipment shall be declared in the Engine or Propeller Type Certificate Data Sheet or the equipment Declaration of Design and Performance, as appropriate.

2.1.3 Where the equipment is to be the subject of an application to the CAA for accessory approval, appliance registration or radio approval, as provided by BCAR Sections A or B, Chapters A/B4-8 or A/B4-10, the software levels, adopted by the equipment manufacturer as a basis for the design, and the reference number of the associated Accomplishment Summary‡, shall be declared in the Declaration of Design and Performance.

2.1.4 Where the system or equipment is to be approved under the component procedure of BCAR Sections A or B, Chapter A/B4-8 or, under the aircraft modification procedure of BCAR Sections A or B, Chapter A/B2-5, the software levels of the system or equipment shall be declared.
2.1.5 Details of system and equipment software levels should be made available to the aircraft operators to assist in the evaluation of post-certification modifications (see paragraph 2.3).

2.2 Initial Certification In respect of a software-based system or equipment, the responsible Design Organisation shall provide evidence to the CAA that the software has been designed, tested and integrated with the hardware in a manner which ensures compliance with the relevant requirements of BCAR Sections A or B, Chapters A/B 4-2, A/B 4-4, A/B 4-8, A/B 4-10 and A/B 3-11 (see paragraph 3.1).

2.3 Post-Certification Modifications In respect of systems and equipment with Level 1 or Level 2 software, a modification which affects software shall not be embodied unless it has been approved by the responsible Design Organisation (see paragraph 3.2).

3 INTERPRETATION OF REQUIREMENTS

3.1 Initial Certification

3.1.1 An applicant for the approval of a software-based system or equipment may use the guidance material given in Document DO-178B/ED-12B (or an agreed equivalent standard).

3.1.2 A software configuration management plan, e.g. as defined in Section 7 and paragraph 11.4 of Document DO-178B/ED-12B, will be required as a means of software identification and change control to be effective throughout the life of the equipment.

3.1.3 Organisations approved by the CAA in accordance with BCAR Section A, Sub-section A8 will need to ensure that their design and quality assurance procedures are appropriate for the software aspects of the work undertaken. These procedures should form part of the Exposition of the Organisation.

3.2 Post-Certification Modifications

3.2.1 Modifications to software will be subject to the same approval procedures as are applied to hardware modifications (see relevant Chapters of BCAR Sections A or B). Modified software will need to be identified and controlled in accordance with the procedures stated in the software configuration management plan. The guidance material given in Document DO-178B/ED-12B (or an agreed equivalent standard) may be used as a basis for the approval of software modifications.

NOTE: The term ‘maintenance’ is often used by software specialists when referring to modifications to software.

3.2.2 The CAA will require the design and investigation of modifications, including those proposed by the aircraft operator, to involve the support service provided by the responsible Design Organisation. The re-certification effort will need to be related to the software levels. Experience has shown that an aircraft operator is unlikely to justify the establishment of its own software design capability. Therefore, where the software is classified in Level 1 or Level 2, the aircraft, engine or propeller constructor, as appropriate, would normally be the responsible Design Organisation for certification purposes, although related tasks may be delegated to equipment manufacturers or software organisations.

3.2.3 Aircraft operators will need to ensure that their defect reporting procedures will report software problems to the responsible Design Organisation.

4 SOFTWARE DOCUMENTATION

4.1 The documentation to be made available to the certifying authority is as listed in DO-178B/ED-12B.

4.2 Where the CAA is validating an approval granted to a system or equipment by a foreign airworthiness authority, the CAA will notify the applicant which documents are to be submitted. In many cases, a reasonably comprehensive accomplishment summary, as outlined in paragraph 11.20 of DO-178B/ED-12B, may suffice. Guidance on the preparation of an accomplishment summary is given in Appendix 2 to this Notice.

5 IMPLEMENTATION With effect from 1 August 1986, software in aircraft systems and equipment will be subject to the provisions of this Airworthiness Notice No. 45A, except
for existing systems and equipment, where the provisions of Airworthiness Notice No. 45 have already been adopted.

* Obtainable from EUROCAE, 17 Rue Hamelin, 75116 Paris Cedex 16, France
‡ The Accomplishment Summary is identified in paragraph 11.20 of DO-178B/ED-12B.

6 CANCELLATION  This Notice cancels Airworthiness Notice No. 45A, Issue 2 dated 29 October 2001, which should be destroyed.
### Relationship Between Function Criticality Category And Software Level

<table>
<thead>
<tr>
<th>Effect on aircraft and occupants of failure conditions or design error</th>
<th>FAR 25.1309 and JAR 25.1309 definitions</th>
<th>AMJ 25.1309 definitions</th>
<th>FAA Advisory Circular 25.1309-1A definition of Criticality Category</th>
<th>DO-178B/ED-12B Software level*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No significant degradation of aircraft capability or crew ability</td>
<td>Slight reduction of safety margins, slight increase in workload, e.g. routine changes in flight plan, or physical effects but no injury to occupants</td>
<td>Signifcant reduction in safety margins, reduction in the ability of the flight crew to cope with adverse operating conditions impairing their efficiency, or injury to occupants</td>
<td>Non-essential</td>
<td>Level D</td>
</tr>
<tr>
<td>Reduction of the aircraft capability or of the crew ability to cope with adverse operating conditions</td>
<td>Large reduction in safety margins, physical distress or workload such that the flight crew cannot be relied upon to perform their tasks accurately or completely, or serious injury to or death of a relatively small proportion of the occupants</td>
<td></td>
<td>Essential</td>
<td>Level C</td>
</tr>
<tr>
<td>Prevention of continued safe flight and landing of the aircraft</td>
<td></td>
<td></td>
<td></td>
<td>Level B</td>
</tr>
</tbody>
</table>

* Using appropriate design and/or implementation techniques, it may be possible to use a software level lower than the functional categorisation.
Software Accomplishment Summary

PARAGRAPH 11.20 OF DO-178B/ED-12B

1 GENERAL

1.1 The software accomplishment summary is considered the primary document for use by the certifying authorities. It should identify all other documents which may be required for information or available for submission. The document is a summary, normally no more than ten pages long. However, its length will depend on the complexity and criticality of the system or equipment and the associated software levels. The accomplishment summary may evolve from the Plan for Software Aspects of Certification defined as DO-178B/ED-12B, or subsequent issue.

1.2 Where the application relates to an equipment approval, the summary will need to be prepared by the equipment manufacturer. For approval of the installation of the equipment into an aircraft, engine or propeller system, the installer may need only to produce a supplement to the manufacturer’s summary to reflect the additional certification effort.

1.3 Where a significant change is proposed to the software of an approved system or equipment, the accomplishment summary should be reviewed and, where necessary, amended to take account of the change. The CAA will normally require a copy of the amended summary prior to acceptance of a significant software change.

2 CONTENT As a minimum, information relevant to the particular software version should be included in the summary under the following headings:

(a) (i) System and Equipment Description This section should briefly describe the equipment functions and hardware including safety features which rely on hardware devices or system architecture.

(ii) Organisation of Software This section should identify the particular software version and briefly describe the software functions and architecture with particular emphasis on the safety and partitioning concepts used.

The size of the final software design should be stated, e.g. in terms of memory bytes, number of modules. The language(s) used should also be stated.

(b) Criticality Categories and Software Levels This section should state the software levels applicable to the various parts of the software. The rationale for their choice should be stated, either directly, or by reference to other documents.

(c) Design Disciplines This section should briefly describe the design procedures and associated disciplines which were applied to ensure the quality of the software. The organisations which were involved in the production and testing (including flight testing) of the software should be identified and their responsibilities stated.

(d) Development Phases The development phases of the project should be summarised. This information could be included in sub-paragraph (h) below.

(e) Software Verification Plan This section should briefly summarise the plan and the test results.

(f) Configuration Management The principles adopted for software identification, modification, storage and release should be briefly summarised.

(g) Quality Assurance The procedures relating to quality assurance of the software should be summarised including, where applicable, those procedures which applied
to liaison between the equipment manufacturer and the aircraft, engine or propeller constructor, as appropriate.

(h) **Certification Plan** This section should provide a schedule detailing major milestones achieved and their relationship to the various software releases.

(i) -

(j) **Organisation and Identification of Documents** This section should identify the documents which satisfy the requirements of DO-178B/ED-12B.

(k) **Software Status** Any known errors, temporary patches, functional limitations or similar shortcomings associated with the delivered software should be declared and the proposed timescale for corrective action stated.
Aircraft Maintenance Engineers Licensing – General Licensing Information

1 GENERAL

1.1 JAR-66 was fully implemented in the UK on 1st June 2001 for aircraft (except airships) of 5700 kg MTOM and above. At the same time, BCAR Section L Issue 14 became effective for maintenance of aircraft below this weight. Highlights of some issues arising from the change are given in paragraphs 2 and 3 of this Notice.

1.2 Dates and venues of written examinations are shown in Appendix 1 of this Notice which is correct at the time of publication. This and other detailed information on licensing are published on the Personnel Licensing area of the CAA web site www.srg.caa.co.uk. This site is updated frequently and engineers preparing to apply for exams or licence issue/extension are advised strongly to view it for current information on policy, procedures or exam schedules. Application forms may also be downloaded from the site.

2 JAR-66 QUALIFICATION FOR MAINTENANCE CERTIFYING STAFF

2.1 JAR-66 became fully effective on 1st June 2001 for aircraft (excluding airships) of 5700 kg MTOM and above. All applicants for new licences or for extensions to the basic category of existing licences for the certification of maintenance on aircraft above 5700 kg must now qualify under the requirements of JAR-66. However until the transfer of all protected rights to JAR-66 licences, type ratings for aircraft above this weight, where permitted, will continue to be available to existing Section L licence holders.

2.2 Holders of certification privileges valid on 1st June 2001 may qualify for protected rights. Those who wish to claim protected rights must have these rights converted to a JAR-66 licence format before 1st June 2011.

2.3 It is the CAA’s intention to transfer protected rights held on existing BCAR Section L licences to a JAR-66 format within the next few years as they become due for renewal. This is likely to begin once the requirements for the inclusion in JAR-66 of aircraft below 5700 kg are known. Until that time, those who convert BCAR licences which include privileges below 5700 kg may need to hold both JAR-66 and Section L licences.

2.4 JAR-66 application forms, which may be downloaded from the CAA website www.srg.caa.co.uk, should be used as follows:

Application for transfer of protected rights (includes conversion of a Section L licence) JAA 19C/SRG 1001
Application for JAR-66 written examinations JAA 19E/SRG 1002
Application for a JAR-66 type rating and removal of limitations from a type rating JAA 19T/SRG 1003
Application for issue or extension of JAR-66 basic Licence (other than on transfer of protected rights) and removal of limitations from a type rating JAA 19IE/SRG 1004

2.5 JAR-66.45 states that ratings will be granted following satisfactory completion of the relevant category B1 or B2 aircraft type training approved by the JAA full member Authority or by an appropriately approved JAR-147 maintenance training organisation. The CAA’s preference remains that the type training is delivered by JAR-147 organisations, which has
the benefit of mutual recognition across the JAA Member States. However, it is recognised that approval to JAR-147 is not always possible or practicable. In such cases the CAA has established a means whereby UK maintenance organisations can apply for direct approval of a type course which is not delivered under JAR-147. Most manufacturers’ courses will require approval under this provision. Approval is vested in the course user - not the course provider - who will be required to have carried out a training needs analysis and have made an assessment of the course. Application for approval of a type course, for which a charge is payable, should be made on form SRG 1013 which is available from Personnel Licensing or may be downloaded from the CAA website www.srg.caa.co.uk. Further information is contained in the guidance notes with the form.

3 BCAR SECTION L

The latest issue of BCAR Section L can now be viewed on the CAA website under www.caa.co.uk/publications. It includes additional type ratings to reflect the current Airworthiness Notice 10, the addition of diesel technology within syllabus module 6 and changes to the arrangement of some topics within modules 6, 7 and 8. There are also changes to the approval of courses where type training is required for the grant of a type rating.

4 INTRODUCTION OF AIRCRAFT MAINTENANCE ENGINEERS LOGBOOK

4.1 Under JAR-66 there is a requirement to record satisfactory basic training and skills attainment as a prerequisite for basic licence issue, both for applicants who have completed a JAR-147 training course and applicants who have not had formal technical training.

4.2 To assist both basic and type rating applicants to demonstrate that they meet the licensing requirements, the CAA is introducing an Aircraft Maintenance Engineers Logbook in which engineers can record their experience and qualifications and to confirm technical competency when applying for a licence.

4.3 Use of the logbook will be voluntary; but where a logbook is submitted in support of an application for a licence issue or extension it will enable the CAA to process the application more efficiently and reduce the handling time for the application. A general statement of experience for the licence will continue to be required on the application form but the logbook, provided that it has been maintained clearly and accurately, will supply the necessary supporting information in the required format and level of detail. The CAA reserves the right to request supporting information when further clarification becomes necessary. The logbook may be used to support applications under BCAR Section L and JAR-66.

4.4 To underpin the Logbook, an Assessor system is being introduced. The Assessor is a person who has been accepted by the CAA to confirm that the person applying for a licence or type rating has met the required practical training and experience requirements and that certain entries in the logbook that support the application for a basic licence or type rating are correct. The Assessor will also confirm that the necessary competencies have been achieved by the licence applicant and that the required depth and scope of experience has been gained. In doing so, the Assessor will be actively supporting the licence application submitted to the CAA.

4.4.1 When the application for the grant or extension of a licence is made through a organisation holding JAR 145 approval granted by a JAA Member State or a UK CAA-approved JAR 147 organisation, acceptance of the Assessor is implicit by virtue of holding a supervisory or management position within the approved organisation. In the case of UK-approved organisations, the CAA expects provision to be made for the procedures supporting the Assessor function to be included in the Management Organisation Exposition.

4.4.2 When the licence application is not made through a JAR-approved organisation, the Assessor must hold an authorisation issued by Personnel Licensing before endorsing logbook entries and the application form. An applicant for authorisation as an Assessor should
normally be a senior licensed aircraft engineer whose licence coverage encompasses that for which licence applications will be made or a person with acceptable experience who holds or who has held a senior position in an approved aircraft maintenance organisation.

4.4.3 Those who wish to act as an Assessor where individual authorisation by the CAA is required should apply on form SRG 1014 which is available from Personnel Licensing or can be downloaded from the CAA website srg.caa.co.uk. No charge is currently payable for the application. Where the application is accepted, a letter of authorisation will be issued which will define the licence categories for which the person may act as an Assessor. The authorisation will normally be valid for two years. Individually authorised Assessors will have to reapply at the end of that period if they wish to continue to act as such. No reminder will be sent.

4.5 The logbook is made up of the following sections and includes instruction for use:

**Personal Data and Employment Record**

**Basic Training Record**
To record the satisfactory completion of any JAR 147 Approved Basic Training Course or other relevant academic study. An Assessor must certify that the information included in this section is correct.

**Basic Skills Requirements**
This part lists the practical competencies that are required to be assessed for basic licence application in the relevant categories. An Assessor must verify achievement of competency in these areas.

**Type Training and Supplementary Training**
This is to record the satisfactory completion of type training courses and other specialist training courses.

**Maintenance Experience**
Experience will be recorded in this Part and confirmed by a supervisory LAE. However an Assessor will be required to confirm achievement of the level of type training experience required.

**Typical Acceptable Experience by ATA Code**
This lists a range of typical experience tasks listed by ATA code.

4.6 The logbook will be in a loose-leaf format to accommodate the addition of extra pages when necessary. Details of availability and prices will be published on the CAA website once arrangements for publication have been finalised.

5 **RENUMBERING OF ENGINEERING LICENCES**

5.1 All engineers and maintenance organisations should be aware that as a result of the engineer licensing database being transferred to a common IT system already in use for flight crew licensing and aeromedical services, all valid Engineer Licences will be renumbered. All such licences held by an individual will then carry the same number but will be identified by a different prefix. All BCAR Section L licence numbers will be prefixed AMEL/ and all JAR-66 licence numbers will begin CAA AML/. The licence number will also be suffixed with a letter.

5.2 A licence showing the new number will be issued at the first reprinting of the licence after the new system comes into operation, which is likely to be in late October. The CAA will continue to hold records of old licence numbers that will remain valid until a new licence is issued. There is no need to apply for a new licence before a normal licence transaction.

5.3 The new licence number, once issued, will become a unique personal reference number that should be quoted whenever contacting the CAA’s Personnel Licensing department or Medical Division.
6 EXAMINATION VENUES AND DATES  A list of written examination dates and venues is given at Appendix 1.

7 CANCELLATION  This Notice cancels Airworthiness Notice No. 46 Issue 16 dated 25 October 2002 which should be destroyed.
**Engineer Licensing Examination Dates for 2003**

All Engineer Licensing written examinations are held at the main Personnel Licensing Department examination venues at Gatwick, Glasgow, Oxford, Silsoe and Macclesfield College. The venues can seat, in total, a minimum of 250 candidates per month. Venue details will be sent with each examination confirmation.

Arrangements for oral examinations remain unchanged and are conducted at the Regional Offices.

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Please note that published examination dates may be subject to alteration or cancellation.

The time between the closing date for applications and the examination sitting is two weeks. Personnel Licensing Department will aim to send booking confirmations, venue details and examination timetables to reach candidates within 2 days of the booking and in any case at least 1 week prior to the sitting.
Licensed Aircraft Maintenance Engineers – Personal Responsibility When Medically Unfit or Under The Influence Of Drink Or Drugs

1 INTRODUCTION

1.1 The International Civil Aviation Organisation (ICAO) has introduced an amendment to Annex 1 to the convention on international civil aviation which will have the effect of extending certain standards and recommended practices to all licence holders. The changes resulting from the amendment are concerned with medical fitness and the use or abuse of intoxicating liquor, narcotics or drugs.

1.2 To implement these changes the Air Navigation No. 2 Order 1995 (ANO) introduced two new Articles. Article 13(7) which prohibits the exercise of the privileges of an aircraft maintenance engineer’s licence when the holder knows or suspects that his or her physical or mental condition renders him or her unfit to exercise such privileges, and Article 13(8) which prohibits the exercise of licence privileges when the holder is under the influence of drink and/or drugs to such an extent as to impair his or her capacity to exercise such privileges.

1.3 JAR-66 (Certifying Staff-Maintenance) was adopted on 3 April 1998 and became effective on 1 June 1998. In a similar manner to the ANO Articles 13(7) and (8), JAR 66.50 imposes a requirement that certifying staff must not exercise the privileges of their certification authorisation if they know or suspect that their physical or mental condition renders them unfit. The associated Acceptable Means of Compliance (AMC 66.50) mentions alcohol and drugs. The guidance material in this Notice should be considered equally applicable to JAR-66.

1.4 It should be noted that JAR-66 also refers to mental fitness and specifically states that the holder must not exercise the privileges of their licence/authorisation if a ‘mental condition renders them unfit to exercise such privileges’. In this sense, mental condition means psychological integrity.

2 GENERAL

2.1 An aircraft maintenance engineer’s licence authorises the holder, subject to any conditions that may be specified on the licence, to issue various certificates relating to aircraft maintenance. The process of issuing these certificates (Certificates of Maintenance Review, Certificates of Release to Service and Certificates of Fitness for Flight under the ‘A’ Conditions) requires clear decisions to be made that directly affect the airworthiness of the aircraft to which they relate. It follows that the quality of these decisions is directly influenced by the physical and mental state of the certifier at the time of certification, and whether or not he or she is subject to the adverse effects of drink and/or drugs.

2.2 The corporate management of all approved maintenance organisations are required to review this Airworthiness Notice and implement suitable policies and procedures to make all maintenance staff aware of them – whilst the requirements of Articles 13(7) and 13(8) or JAR 66.50, by definition, fall on those who certify the completion of maintenance, the guidance material contained in this Airworthiness Notice is equally applicable to all non-licensed personnel engaged in aircraft maintenance tasks and in principle should be
adopted throughout the aviation industry as a code of practice. Organisations shall also take note of items in paragraph 3 which require their participation in the areas concerned.

2.3 All persons to whom this notice applies should be aware of the guidance material contained herein. It is the responsibility of the individual concerned to ensure that he does not report for duty or certify if he is genuinely unfit. Such persons should also be aware of an organisation’s own internal policies and monitoring procedures to verify the above.

3 GUIDANCE

3.1 Fitness In most professions there is a duty of care by the individual to assess his or her own fitness to carry out professional duties. This has been a legal requirement for some time for doctors, flight crew members and air traffic controllers. Licensed aircraft maintenance engineers are also now required by law to take a similar professional attitude. Cases of subtle physical or mental illness may not always be apparent to the individual but as engineers often work as a member of a team any sub-standard performance or unusual behaviour should be quickly noticed by colleagues or supervisors who should notify management so that appropriate support and counselling action can be taken. In particular, a decrease in mental fitness in many cases may be related to stress from within the working environment or to the personal circumstances of the individual. Instances of aggressive behaviour, vagueness and slippage of personal standards (cleanliness, appearance etc.) may be indicative of more serious mental issues. Such issues may bring into question the ability of the individual to be trusted or to maintain the necessary levels of concentration to take appropriate decisions on airworthiness matters.

3.2 Fatigue Tiredness and fatigue can adversely affect performance. Excessive hours of duty and shift working, particularly with multiple shift periods or additional overtime, can lead to problems. Whilst the safety management aspects of these matters are being addressed through the UK Operators Technical Group individuals should be fully aware of the dangers of impaired performance due to these factors and of their personal responsibilities.

3.3 Stress Everyone is subject to various stresses in their life and work. Stress can often be stimulating and beneficial but prolonged exposure to chronic stress (high levels or differing stress factors) can produce strain and cause performance to suffer allowing mistakes to occur. Stress factors can be varied, physical – e.g. heat, cold, humidity, noise, vibration; they can be due to ill-health or worries about possible ill-health; from problems outside the workplace – e.g. bereavements, domestic upsets, financial or legal difficulties. A stress problem can manifest itself by signs of irritability, forgetfulness, sickness absence, mistakes, or alcohol or drug abuse. Management have a duty to identify individuals who may be suffering from stress and to minimise workplace stresses. Individual cases can be helped by sympathetic and skilful counselling which allows a return to effective work and licensed duties.

3.4 Eyesight A reasonable standard of eyesight is needed for any aircraft engineer to perform his duties to an acceptable degree. Many maintenance tasks require a combination of both distance and near vision. In particular, such consideration must be made where there is a need for the close visual inspection of structures or work related to small or miniature components. The use of glasses or contact lenses to correct any vision problems is perfectly acceptable and indeed they must be worn as prescribed. Frequent checks should be made to ensure the continued adequacy of any glasses or contact lenses. In addition, colour discrimination may be necessary for an individual to drive in areas where aircraft manoeuvre or where colour coding is used, e.g. in aircraft wiring. Organisations should identify any specific eyesight requirement and put in place suitable procedures to address these issues.

3.5 Hearing The ability to hear an average conversational voice in a quiet room at a distance of 2 metres (6 feet) from the examiner is recommended as a routine test. Failure of this test would require an audiogram to be carried out to provide an objective assessment. If necessary, a hearing aid may be worn but consideration should be given to the practicalities of wearing the aid during routine tasks demanded of the individual.
It is important to remind employers of individuals working in areas of high ambient noise
of the requirement of the Noise at Work Regulations 1989 which require employers to
carry out assessments of noise levels within their premises and take appropriate action
where necessary.

3.6 Drug and Alcohol Abuse  Drinking problems or the use of illicit or non-prescribed drugs
are unacceptable where aircraft maintenance safety is concerned and once identified will
lead to suspension of the licence or company authorisation and possibly further licensing
action being considered.

3.7 Medication  Any form of medication, whether prescribed by a doctor or purchased over
the counter and particularly if being taken for the first time, may have serious
consequences in the aviation maintenance environment unless three basic questions can
be answered satisfactorily:
(a) Must I take medicines at all?
(b) Have I given this particular medication a personal trial for at least 24 hours before go-
ing on duty, to ensure that it will not have adverse effects on my ability to work and
make sound decisions?
(c) Do I really feel fit for work?
Confirming the absence of adverse effects may need expert advice and General
Practitioners, Company Medical Officers and the Medical Division of the Civil Aviation
Authority are all available to assist in this matter. Common types of medication in use and
their effects are further described in Appendix 1.

3.8 Alcohol  Alcohol has similar effects to tranquillisers and sleeping tablets and may remain
circulating in the blood for a considerable time, especially if taken with food. It should be
borne in mind that a person may not be fit to go on duty even eight hours after drinking
large amounts of alcohol. Individuals should therefore anticipate such effects upon their
next duty period. Special note should be taken of the fact that combinations of alcohol and
sleeping tablets, or anti-histamines, can form a highly dangerous or even lethal
combination.

3.9 Anaesthetics  It should be remembered that following local, general, dental and other
anaesthetics, a period of time should elapse before returning to duty. This period will vary
depending upon individual circumstances, but may even extend to 24 or 48 hours. Any
doubts should be resolved by seeking appropriate medical advice.

4 SUMMARY

4.1 The effects of illness, injury or medication on work performance are the direct concern of
the individual. Where there is doubt about the ability of an individual to make sound
technical decisions the implications of Article 13(7) and 13(8) of the ANO 2000 or JAR 66.50
must be taken into account i. e. the individual must not exercise the privileges of his or her
licence or authorisation whilst unfit. While this notice gives some guidance on the issues
to be considered it cannot be comprehensive. If individual licence holders or their
managers have any doubt they should consult the medical sources mentioned for advice.
If there is any difficulty in obtaining such advice the Occupational Health Unit of the Civil
Aviation Authority Medical Department at Aviation House, Gatwick (01293-573700) will be
glad to give all possible assistance.

5 CANCELLATION

This Notice cancels Airworthiness Notice No. 47 Issue 4 dated 18 March 1999 which
should be destroyed.
The following are some of the types of medicine in common use which may impair work performance. This list is not exhaustive and care should be taken in ensuring the likely effects of any prescribed drug are adequately known before taking it.

(a) Sleeping Tablets – These dull the senses, cause mental confusion and slow reaction times. The duration of effect is variable from person to person and may be unduly prolonged. Individuals should have expert medical advice before using them;

(b) Anti-depressants – These can depress the alerting system and have been a contributory cause of mistakes leading to fatal accidents. A person should stop work when starting anti-depressants and only return when it is clear that there are no untoward side-effects. It is recommended that individuals seek medical advice from their General Practitioner or appropriate medical specialist before returning to work;

(c) Antibiotics – Antibiotics (penicillin and the various mycins and cyclines) and sulpha drugs may have short term or delayed effects which affect work performance. Their use indicates that a fairly severe infection may well be present and apart from the effects of these substances themselves, the side-effects of the infection will almost always render an individual unfit for work;

(d) Anti-histamine – Such drugs are widely used in cold cures and in the treatment of hay fever, asthma and allergic skin conditions. Many easily obtainable nasal spray and drop preparations contain anti-histamines. Most of this group of medicines tend to make the taker feel drowsy. Their effect, combined with that of the condition, will often prevent the basic three questions (paragraph 3.7 of the Notice) from being answered satisfactorily. Admittedly very mild states of hay fever etc., may be adequately controlled by small doses of anti-allergic drugs, but a trial period to establish the absence of side effects is essential before going on duty. When individuals are affected by allergic conditions which require more than the absolute minimum of treatment and in all cases of asthma, one of the above mentioned sources of advice should be consulted;

(e) ‘Pep’ pills (e.g. containing Caffeine, Dexedrine, Benzedrine) used to maintain wakefulness are often habit forming. Susceptibility to each drug varies from one individual to another, but all of them can create dangerous over-confidence. Over-dosage may cause headaches, dizziness and mental disturbances. The use of ‘pep’ pills whilst working cannot be permitted. If coffee is insufficient, you are not fit for work;

(f) Drugs for the relief of high blood pressure are proving to be very effective in controlling this condition. However, antihypertensive agents all have some side effects and should not be administered before adequate assessment of the need for treatment. The prescribing practitioner should be able to advise on any side effects to be considered;

(g) Drugs when prescribed for Anti-malaria in normally recommended doses do not usually have any adverse effects. However, the drug should be taken in good time so that the question in paragraph 3.7 (b) of the Notice can be answered;

(h) Oral contraceptive tablets in the standard dose do not usually have adverse effects, although regular supervision is required;

(i) ‘SUDAFED’ is the trade name of a preparation containing pseudo-ephedrine hydrochloride. This may be prescribed by GPs for relief of nasal congestion. Side-effects reported however are anxiety, tremor, rapid pulse and headache. The preparation does not contain anti-histamines which could sedate and cause drowsiness but the effects can nevertheless affect skilled performance. Sudafed, therefore, is not a preparation to be taken when making engineering decisions or performing licenced duties.
**NOTE:** Although the above are common groups of drugs, which may have adverse effects on performance, it should be pointed out that many forms of medication, which although not usually expected to affect efficiency may do so if the person concerned is unduly sensitive to a particular drug. Therefore no drugs, medicines, or combinations, should be taken before or during duty unless the taker is completely familiar with the effects on him or her of the medication and the drugs or medicines have specifically been prescribed for the individual alone. Again the sources of advice mentioned earlier in this notice should be consulted in cases of doubt.
Airworthiness Flight Testing For Renewal Of Certificates Of Airworthiness For Aircraft With a Maximum Total Weight Authorised Exceeding 2730kg

1 INTRODUCTION
Airworthiness flight tests shall be completed periodically to ensure that aircraft flight characteristics do not differ significantly from those previously accepted by the CAA for the type and to ensure proper functioning in flight. This Airworthiness Notice provides guidance with respect to the airtest frequency requirements for aircraft types with a Maximum Total Weight Authorised exceeding 2730kg.

2 AIRWORTHINESS FLIGHT TESTING
2.1 The requirements for airworthiness flight testing in respect of the renewal of Certificates of Airworthiness are published in BCAR Section A Chapters A3-5 and Section B Chapter B3-5. In summary, airworthiness flight tests shall be completed annually or as defined by a fleet test programme agreed between the CAA and the operator, maintenance organisation or other organisation acceptable to the CAA.

2.2 Additionally, 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. Types in this category have become eligible based on a satisfactory airworthiness flight test record.

3 AIRCRAFT TYPES ELIGIBLE FOR 3 YEAR FLIGHT TEST INTERVALS
In the absence of an agreed fleet test programme the following appended aircraft types are eligible for airworthiness flight tests at 3 year intervals.

4 APPLICATION
It is the intention to update the appended lists of prescribed test frequencies at periodic intervals. Should doubt arise with respect to the validity of the appended lists, the CAA Flight Department should be consulted, Telephone No. 01293 573114.
Aeroplane Types Which Are Eligible For Airworthiness Flight Tests At Three Year Intervals

**Large Aeroplanes**

- Airbus A300
- Airbus A310
- Airbus A320 (Series 111, 211, 212 and 231)
- ATP
- ATR 42 (Series 300)
- Avro 146-RJ70/85/100
- BAC 1-11 (Series 200, 300, 400 and 500)
- BAe 125 (Series 800 and 1000)
- BAe 146 (Series 100, 200 and 300)
- Beechjet (Series 400 and 400A)
- Boeing 707
- Boeing 727
- Boeing 737 (Series 200/ADV, 300, 400 and 500)
- Boeing 747 (Series 100 and 200)
- Boeing 747 (Series 400 – RB 211 Engines)
- Boeing 757 (Series 200)
- Boeing 767 (Series 200 and 300)
- Cessna 500 Citation 1
- Cessna 550 Citation 2
- Cessna 560
- Concorde
- DC-9
- DC-10
- DHC-7
- DHC-8 (Series 100 and 300)
- Douglas C47 Dakota 3, 4 and 6
- Dove 6, 7 and 8
- Fokker F27 (Series 500 and 600)
- Fokker F27 Mk 050
- Fokker F28 Mk 100
- Gulfstream I/II/III/IV
- Hawker 800, 1000
- HS 125 (Series 1B, 3B/RA, 400, F400, F600, F3B/RA, 600 and 700)
- HS 748 (Series 2A and 2B)
- Jetstream (Series 31, 32 and 41)
- Learjet 35A
Lockheed Tristar (Series 100, 200 and 500)
McDonnell Douglas MD83 MU 300
Shorts SC5 Belfast
Twin Pioneer
Vanguard
Viscount 810

**Light & Executive Aeroplanes**
Aero Commander 680E
Aero Commander 685
Beagle 206
Beech Models C45, 3NM, 3TM
Beech Models B70, B90, C90, C90A, E90, F90, A100, 200 and 300LW
BN 2A/ 2B Islander
BN 2T Islander
Cessna Models 340A, 404, 414/ A, 421, 421A/ B/ C and 425
DHC-6 Twin Otter
Dornier Do-28
Jetstream Mk 1 and Series 200
NAC6 Fieldmaster
Piper Models PA31, 31-325, 31-350, 31P, 31T1
Reims Cessna F406

**Helicopter Types Which Are Eligible For Airworthiness Flight Tests At Three Year Intervals**

AS 332L/ L1
Bell 212
Bell 222
Bell 214ST
Sikorsky S61
Sikorsky S76A/A+ /B
Eligibility of Organisations for Design and Production Approvals

1  PURPOSE  The purpose of this Airworthiness Notice is to clarify the criteria used by the CAA in determining if approval of an organisation is necessary and appropriate for the regulatory control of airworthiness.

2  INTRODUCTION

2.1 Under the Civil Aviation Act, the CAA are entrusted through the Air Navigation Order 2000 (ANO), as amended, with responsibility for the regulation of the Airworthiness and Flight Safety Standards of Aircraft (and Aircraft Components which are intended for fitment to such aircraft) and the safety of aircraft occupants. To facilitate the discharge of this duty the ANO provides various means of enabling technical tasks to be undertaken by the aviation industry. One such provision is Article 133 of the ANO wherein it is prescribed that:

'In relation to any of its functions pursuant to any of the provisions of this Order the CAA may, either absolutely or subject to such conditions as it thinks fit, approve a person as qualified to furnish reports to it and may accept such reports.'

2.2 In this context, a Corporate Body (e.g. a Registered Legal Identity) will qualify as the person specified in Article 133 of the ANO. Furthermore, for the purposes of CAA organisation approval, a Corporate Body (or more than one working in an acceptable combination) is deemed to be an 'organisation'. Certain BCAR approvals are now being replaced by JAR-21 subparts and the requirements for the granting of CAA approval to organisations, are prescribed in either the Joint Aviation Authorities’ publication JAR-21 or BCAR Section A, Sub-Section A8. The intention of these requirements is to ensure that approval is only granted to applicants who are assessed by the CAA as being competent and properly equipped to undertake the intended delegated task.

NOTE: This assessment will normally necessitate a comprehensive initial investigation of approval applications and, following approval, periodic audit to ensure that the approved standard is maintained.

2.3 Each approved organisation is required by JAR-21 or BCAR Section A, Sub-Section A8 to issue certain prescribed certifications in relation to the items or services it provides under the authority of the CAA organisational approval held. In some cases, the organisation makes reports to the CAA in the form of substantiation of design submissions. In other cases, e.g. manufacturing organisations, reports are not made directly to the CAA but each such organisation is approved to issue certifications which form the essential chain of evidence of control to the point at which the CAA indicates its satisfaction that an aircraft or aircraft component which is intended for fitment to such an aircraft, is fit to fly e.g. by the issue of a Certificate of Airworthiness.

2.4 Many organisations regard CAA approval as a desirable business asset even though there is no regulatory need for CAA approval in the relevant industry sector. However, it is necessary to limit approvals to those areas of industry where there is a clear regulatory need for the CAA to make a technical assessment of the organisational standards in order to ‘discharge the CAA responsibilities as prescribed in paragraph 2.1.’
2.5 Consequently the CAA reserves the right to refuse new applicants and revoke certain existing approvals on the grounds that the CAA has determined that there is no regulatory need for such approvals.

3 BACKGROUND

3.1 For many products which can be classified either as ‘consumable’ or ‘standard parts’ (as defined in BCAR Section A, Chapter A4-8 or A4-10 for UK constructed aircraft or Section B Chapter B4-8 or B4-10 for foreign constructed aircraft) the CAA has long required that the Approved Organisation using such products should bear responsibility for the manner of their application. It is normal for consumable or standard parts to be identified in the technical publications for the aircraft or equipment which are provided by the responsible design authority.

3.2 Cabin interior furnishings are examples of products where approval of the manufacturers is not required, but standards are important and are subject to control in other ways such as compliance with Airworthiness Notices 58, 59 and 61 where flammability resistance is required to be verified by testing to specified standards.

3.3 The role of the CAA is, therefore, that of regulation where it is necessary rather than performing an assessment on behalf of the prime contractor.

4 GUIDELINES The CAA has determined that there is no regulatory need for CAA approval of the following organisation types:

4.1 Organisations manufacturing consumable products, examples as follows:
(a) Paints including primer, dopes, varnish, lacquers;
(b) Adhesive tapes and masking materials;
(c) De-watering compounds, solvents, cleaning and de-icing products;
(d) Adhesives and sealants;
(e) Consumable materials employed in welding, brazing and soldering processes (including rods, powder, fluxes etc.);
(f) Fuel, lubricants and fluids;
(g) Chemical, sacrificial, coating and other products used in processing of parts e.g. plating anodes, etchants, electrolytes;
(h) Gaskets shims and washers;
(i) Cable ties, clips, and sleeving.

4.2 Organisations who design, manufacture, or supply the following:
(a) Items which can be verified by inspection on receipt or other means;
(b) Goods or services provided under sub-contract controls operated by a customer organisation whose CAA approval includes the control of sub-contractors;
(c) Electronic components including circuit boards and associated hardware intended for incorporation into equipment (see Airworthiness Notice No. 39);
(d) Items for which the CAA only requires test evidence provided by an approved test house, to an approved standard of conformance to requirements such as the cabin furnishing materials flammability requirements specified in Airworthiness Notices 58, 59 and 61;
(e) Non-structural, non-metallic raw material other than pre-impregnated fabrics;
(f) Ground based equipment, or tools, for access, testing, jigging, cleaning, de-icing, towing etc., except in the case where the performance and reliability of an airborne system depends upon the simultaneous operation of a ground-based element;
(g) Items specifically exempted from approval by ANO Schedule 4 (paragraph 3).
4.3 Overseas Organisations:
(a) Where there is a bilateral arrangement or other appropriate arrangement in force between the local National Airworthiness Authority and the CAA;
(b) Providing items or services where adequate control and certification arrangements, including issue of the Authorised Release Certificate/Airworthiness Approval Tag JAA Form One, are provided by the local National Airworthiness Authority who are acceptable to the CAA;
(c) Except where there is a very specific regulatory need for the direct support of UK registered, or UK constructed, aircraft or equipment.

4.4 Stockist distribution organisations of items other than materials and fasteners from approved manufacturers.

5 COMPLIANCE

5.1 The CAA Safety Regulation Group will normally follow the above guidelines when dealing with approval applications and enquiries. Departure from the criteria for regulatory need will only be considered:
(a) Where clear advantage to the CAA in performing its regulatory task can be identified as a consequence of granting approval, e.g. efficient use of CAA resources; or
(b) Where the CAA determines that the use of a particular product in a specific aviation application necessitates direct CAA regulation of the source of the product. In such cases, any organisation approval granted to the source would only relate to the specific product and aviation application involved; or
(c) Where approval is necessary to support CAA obligations under bilateral arrangements with other National Airworthiness Authorities.

6 EXISTING APPROVALS Organisations already holding approvals which have been determined not to be necessary for regulatory purposes, will be required to relinquish their approval. This will be done as far as possible in an even-handed manner to ensure fair and reasonable treatment.

7 APPLICATION FOR APPROVAL Enquiries regarding organisation and eligibility for approval in general, or regarding applications for specific approval should be made in writing to: D&P Approvals and Quality Assurance Section, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR. Fax No. (44) 01293 573976, E-mail AQAS@srg.caa.co.uk. If necessary, further information and/or application forms can then be supplied.

8 CANCELLATION This Notice cancels Airworthiness Notice No. 49 Issue 2, dated 29 October 2001, which should be destroyed.
Deterioration Of Wooden Aircraft Structures

1 Concern over the susceptibility of wooden aircraft structures to deterioration, and recognition that extensive dismantling and inspection may be required to ensure their continued integrity was first expressed in Airworthiness Notices in 1957. In addition to wooden aircraft built in the United Kingdom, there is now a substantial number of foreign built wooden aircraft on the UK register.

2 Examination of older type wooden aircraft has highlighted several serious structural failures, and continued vigilance is therefore essential if the integrity of wooden aircraft structures is to be maintained. Deterioration has occurred in those assemblies where normal inspection is impossible and has not come to light until the adjacent structure has been disturbed to embody repairs or modifications, or during extensive overhaul. These closer examinations have revealed failure of glued joints in the primary structure and patches of timber in a state of decay as a result of exposure to extremes of atmospheric conditions.

3 General conclusions which have been drawn from the results of the examinations are:-
   (a) the external appearance of wooden aircraft may give little or no indication of the condition of the timber and glued joints beneath the surface.
   (b) Aircraft built with glued ply and timber torsion box construction are the most vulnerable.
   (c) Under extreme conditions, deterioration can be very rapid indeed.
   (d) Lack of proper drainage can be a significant contributory factor, particularly when associated with (c) above.
   (e) Many glues, especially those in use before 1950, lose strength with age and/or cycles of humidity and temperature.

4 Attention is drawn to the following:
   (a) Part of the evidence required for C of A renewal may be information to show that such aircraft have been dismantled, opened up and the upholstery removed to such an extent as to ensure that an adequate sample of timber and glued joints have been inspected and, if found to be defective, made good. In cases where defective timber and glued joints are found, it will be necessary to extend a sample of areas checked in order to establish confidence in the condition of the complete structure. This will apply to all wooden aircraft whether or not maintained to an approved maintenance schedule.

   (b) Wooden aircraft left continuously in the open or, conversely, stored for long periods in very dry conditions are particularly susceptible to deterioration. The type of storage provided for the aircraft must therefore be taken into consideration when assessing the amount of inspection necessary to meet the requirements of (a) above.

   (c) Prospective purchasers of foreign registered aircraft are advised:
(i) to establish with the CAA whether the aircraft type is eligible for the issue of a UK C of A and the requirements/conditions that would apply. Some aircraft not eligible for a C of A may qualify for a Permit to Fly.

(ii) Where such aircraft are of wooden construction, to consider carefully the condition of the structure and its history before applying for the issue of a UK C of A. The CAA will require information as to the type of constructions and glue used.

5 SUPPLEMENTARY INFORMATION CAA Civil Aircraft Airworthiness Information and Procedures Leaflet 6-1, Inspection of Wooden Structures.

6 CANCELLATION This Notice cancels CAA Airworthiness Notice No. 50, Issue 3, dated 24 February 1982, which should be destroyed.
Aerobatic Manoeuvres

1 INTRODUCTION

1.1 Certain light aircraft on the British Register are permitted to perform a wide range of aerobatic manoeuvres although designed for a positive load factor of less than 6g (usually the 4.4g Semi-Aerobatic Load Factor given in British Civil Airworthiness Requirements). This is because, during certification of these aircraft, the permitted aerobatics were evaluated and the design strength was found to provide an adequate margin to permit them to be performed safely.

1.2 However, recording accelerometers were installed in some aircraft to determine (for fatigue life estimation) the actual loadings achieved. These recordings have shown that g loadings in excess of those to which the aircraft were designed have been imposed in service on a sufficiently large number of occasions to suggest that there is a risk that loads greater than the strength of the aeroplane may be imposed inadvertantly.

1.3 This evidence has been collected on aeroplanes of relatively low aerodynamic drag, and there is no evidence to suggest that any problem exists on aeroplanes of relatively high drag such as biplanes, many of which have a long and satisfactory history.

2 WARNING

Pilots of aeroplanes designed to semi-aerobatic load factors (i.e. less than 6 g to limit load) are warned that they should take care not to apply excessive g in the permitted aerobatic manoeuvres.

3 PLACARDING

3.1 On receipt of this Notice the requirements of paragraph 3.2 shall be implemented by owners of the following types of aircraft:

   - Beagle B 121 Series 1 (Pup 100)
   - Beagle B 121 Series 2 (Pup 150)
   - Bolkow 208-A1 Junior
   - Bolkow 208-A2 Junior
   - Bolkow BO.208-C1 Junior.

3.2 The following placard shall be fitted in the cockpit in a position readily visible to the pilots.

   ‘This aeroplane is designed to semi-aerobatic load factors. When performing permitted aerobatics care must be taken not to apply more g than is necessary.’

3.3 The placard may, as a temporary measure, be typewritten on white card, but shall be replaced by a more permanent placard as soon as possible.

3.4 Aeroplanes (other than those listed in paragraph 3.1) with design load factors less than 6g need not be placarded in this respect unless this is required by the Certificate of Airworthiness or Flight Manual. An appropriate amendment to affected Flight Manuals will be issued.

3.5 The need for a placard on aeroplanes entering the UK register in the future will be evaluated at the time of certification.
Flight In UK Air Space Of Foreign Registered Home-Built Aircraft

1 Recommendation INT. S/11-1 of the European Civil Aviation Conference (ECAC), adopted at the eleventh Intermediate Session of ECAC in June 1980 states:

‘That Member States accept home-built aircraft with a Certificate of Airworthiness or a ‘Permit to Fly’ issued by another Member State, to fly in their country without any restrictions other than those stated in the Certificate of Airworthiness or ‘Permit to Fly’.’

2 All ECAC Member States agreed to the recommendation and, in October 1984, CAA implemented it on behalf of the United Kingdom by issuing an Exemption, in the terms set out in Issue 1 of this Airworthiness Notice, from compliance with the appropriate provisions of the Air Navigation Order relating to Certificates of Airworthiness.

3 Since then, European Union legislative changes have removed constraints on aircraft ownership within the EU. AN 52 could, therefore, become a mechanism for importing to the UK, foreign registered home-built aircraft which have not been shown to comply with UK safety requirements.

4 As the Authority believes that the intent of the ECAC recommendation was to permit overflight or short visits by home-built aircraft to any ECAC Member State, the AN has been amended to introduce a time limit to the General Exemption. Provision has also been made for an applicant to make a case for a different Specific Exemption.

5 The revised Exemption requires that the aircraft owner shall provide specified information to the CAA for each visit to the UK. The owner is not required to gain CAA approval or authorisation before making the trip. Instead, the owner is required only to supply the information not later than 28 days after the trip has been completed. It should be noted that the CAA will not acknowledge receipt of this information.

6 This Notice cancels Airworthiness Notice No. 52, Issue 1, dated 22 October 1984, which should be destroyed.

1 In order to facilitate over flight and visits to the UK, the Civil Aviation Authority in exercise of its powers under Article 127 of the Air Navigation Order 2000, as amended, hereby exempts home-built aircraft registered in a Member State of the European Civil Aviation Conference and issued by that State with a Permit to Fly or equivalent document granting permission to fly, from the provisions of Article 8(1) of the said Order to the extent necessary to enable them to fly under the Permit to Fly or equivalent document instead of a Certificate of Airworthiness as prescribed therein, subject to observance of the conditions under which the Permit to Fly or equivalent document was issued by the State of Registry.

2 This Exemption is issued on condition that:
   (a) The aircraft shall not be flown over any assembly of persons or over any congested area of a city, town or settlement.
   (b) The aircraft shall not be flown for the purpose of public transport or aerial work.
   (c) The aircraft shall not remain in the United Kingdom pursuant to this Exemption for more than 28 days in any one calendar year.

   NOTE: For permission for any visit in excess of 28 days permitted by this General Exemption, the aircraft owner needs to apply for an individual Exemption. This application should be made to the Applications and Certifications Section, at the address listed below.

   (d) For each visit to the UK, the aircraft owner shall, not later than 28 days after the visit has been completed, advise the CAA’s Applications and Certifications Section of:
      • the aircraft registration;
      • expected or actual date of entry to the UK; and
      • expected or actual date of exit from the UK.

   NOTE: The preferred proforma for submission of a visit report is included in Appendix 2 to this Notice.

   (e) The aircraft shall only be flown in accordance with daytime Visual Flight Rules.

Contact details:
Applications and Certification Section
1E Aviation House
Gatwick Airport South
West Sussex RH6 0YR
UNITED KINGDOM
Fax: + 44 1293 57 3860 Email: A&C@srg.caa.co.uk.

3 This Exemption shall have effect from the date hereof until revoked.

for the Civil Aviation Authority
dated 22 March 2002
The preferred proforma for submission of an Airworthiness Notice 52 Visit Report is reproduced below. The use of this format is optional.

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1 INTRODUCTION

1.1 A recent incident on an imported light aircraft has shown the possible danger of the presentation of false information to the pilot due to reversed indication by the vertical speed indicator during a fast rate of descent.

1.2 United Kingdom approved instruments and instruments complying with JAA JSTO Specification C8d or the United States TSO Specification C8d are fitted with stops to prevent such occurrence. It is not known whether other instruments, particularly those likely to be installed in imported aircraft of less than 5700 kg (12 500 lb) maximum weight are similarly equipped.

2 ACTION

2.1 Before issue or renewal of the Certificate of Airworthiness of an imported aircraft, it shall be established whether the vertical speed indicator is fitted with limit stops. This may be done by test or reference to the manufacturer.

2.2 If stops are not fitted, either the vertical speed indicator shall be replaced by an instrument that has stops, or alternatively the placard defined in paragraph 3 shall be fitted.

3 PLACARD

3.1 The following placard shall be fitted adjacent to a vertical speed indicator not fitted with stops:—

‘This indicator is not fitted with limit stops and a rate of change of altitude in excess of the maximum calibration will cause indication in the reverse sense.’

3.2 The placard may, as a temporary measure, be typewritten on white card, but shall be replaced by a more permanent placard as soon as possible.

4 RECORD A record of the action taken to comply with paragraph 2 above shall be made in the aircraft log book, quoting the serial number of the instrument.

5 CANCELLATION This Notice cancels Airworthiness Notice No. 53 Issue 1, dated 28 June 1970, which should be destroyed.
Instruments With Unusual Presentations

1. From time to time on imported aircraft, especially those of less than 5700 kg (12 500 lb) maximum weight, instruments are found which have unusual presentations. Whether these instruments are fitted in order to meet mandatory requirements or as extras, they must not be capable of misleading a pilot conversant only with conventional presentations.

2. A CAA evaluation of any such instrument is required for United Kingdom certification of any imported aircraft to which it is fitted, or if it is introduced by modification action. This evaluation will include a review of the actual presentation of the instrument and its position with respect to other instruments in the panel. It will also include flight tests if necessary.

3. Enquiry to the Safety Regulation Group at Aviation House will determine whether or not any such instrument has already been investigated and whether it is accepted for a mandatory or non-mandatory role.

4. Typically, a placard will be required adjacent to any such instrument giving warning of its presentation and stating 'unapproved' if it is fitted only as an extra and is not acceptable in fulfilment of a mandatory requirement.

   NOTE: The placard must not be easily erased, disfigured or obscured.

5. The log book of any aircraft in which such an instrument is fitted and accepted should record the type of instrument and the reference for the acceptance, unless this is covered in the Flight Manual or Type Certification documents.

6. CANCELLATION This Notice cancels Airworthiness Notice No. 54 Issue 1, dated 26 June 1970, which should be destroyed.
Fuel Tank Safety Review

1 INTRODUCTION
In recent years the aviation industry has experienced a number of incidents or accidents involving fuel tank explosions. This experience suggests that on some types, the fuel system installation does not provide as high a level of protection against explosion as had been expected. The purpose of this Notice is to require a safety review based on JAR 25.1309 practices, and taking into consideration in-service experience, be used to identify the need for any modification action to correct unsafe conditions, revisions to Maintenance Requirements and improved maintenance practices required to maintain a satisfactory level of safety.

The FAA has issued a set of new rules related to fuel tank safety including SFAR 88 and amendments to 14 CFR Parts 21, 25, 91, 121, 125, and 129 that require fuel tank system design reviews, associated modification reviews and improved maintenance procedures and practices.

The JAA have requested the National Authorities to mandate that holders of Type Certificates and major modification approvals directly related to the fuel system installation undertake similar safety reviews, in accordance with JAA Interim Policy INT/POL/25/12. The initial JAA recommendation letter was revised and re-issued on 31 January 2003 in order to harmonise JAA and FAA policy. This amended Airworthiness Notice reflects the changes recommended by JAA including the newly harmonised elements. Where identified as necessary by this safety review the introduction of modifications and improved maintenance practices will be mandated.

The CAA fully endorses these recommendations. Operators, UK Type Certificate Holders, Approved Design Organisations and Modification Approval Holders will all need to comply with the contents of this Notice as appropriate.

This revised Notice now includes details of the harmonised criteria against which an application for exemption from this Notice will be considered.

2 APPLICABILITY
This Notice applies to all turbine powered Large Aeroplanes certificated after 1 January 1958 in the Transport or Private Categories with a Type Certificated passenger capacity of 30 seats or more, or a payload of 3402 kg (7500 lb) or more.

3 REQUIREMENT
Holders of Type Certificates and major modification approvals directly related to the fuel system installation on applicable aircraft types are required to carry out a safety assessment in accordance with the principles of JAR 25.1309, using the guidance material provided in Appendix 1 to this Notice. It must be shown that an ignition source within the fuel system cannot result from a single failure and is extremely improbable. For the purpose of this analysis, the whole fuel system should be assumed to be in the flammable range. In addition it should be shown that no heat transfer can lead to fuel auto-ignition within the fuel system. All systems, including the fuel system, that can release heat, in normal and failure conditions to the fuel system should be considered.
Although the assumption is that the fuel tank will always be considered to be flammable, it is recognised that not all non-compliances with JAR 25.1309 necessarily result in an unsafe condition. Harmonised criteria have been developed to determine those non-compliances which result in a potential unsafe condition that requires Mandatory corrective action.

These criteria, including assessment of the fuel tank flammability, are defined in Appendix 2 to this Notice.

Operators are required to identify and list all aircraft fuel tank system major modifications as installed on their aircraft. It is the responsibility of the operators to satisfy themselves that the safety reviews required by this policy have been carried out for all major modifications/STCs installed on their aircraft. In cases where the approval holder is unable to carry out the safety review then the Operator must engage the services of an appropriately approved design organisation to carry out the above safety review.

The outcome of these review exercises is expected to be the identification of modifications to address unsafe conditions, additional Airworthiness Limitations, new or revised Service Information, revised inspection standards and amendment of Maintenance Manuals including the revision of Standard Practices.

Operators are required to provide appropriate training for maintenance personnel, amend maintenance procedures and also to amend Approved Maintenance Programmes to introduce the tasks and inspections arising from this review.

Operators must ensure that all scheduled maintenance tasks, inspection standards and maintenance procedure revisions arising as a result of compliance with this notice or SFAR 88 are complied with.

4  COMPLIANCE

Type certificate holders are required to have submitted and gained approval of their System Safety Analysis reports including identification of the unsafe conditions requiring Mandatory corrective action by 6 June 2003. For STC and major modification approval holders, this date is 6 December 2003. Mandatory corrective actions required to correct potential unsafe conditions identified by the safety reviews, which may include modifications, additional Airworthiness Limitations and revised maintenance activities, will take place after 6 June 2003 with timescales agreed in accordance with normal continued airworthiness practices (e.g. JAR 39).

Where FAA or a JAA member state is the primary certificating authority for the TC, STC or major modification, FAA and CAA will accept compliance findings made by the State of Design in accordance with this harmonised FAA/JAA policy without further showing.

Operators are required to have implemented all applicable maintenance actions, identified by the above design reviews, before 6 December 2004.

5  EXEMPTIONS

Under normal circumstances operators, TC Holders, STC Holders and major modification approval holders would be expected to comply with the content of this notice. In exceptional circumstances, the CAA may consider the grant of an Exemption to this notice under the process identified below.

All petitions for exemption will be co-ordinated with FAA for initial review and comment in accordance with the following criteria. For TC and STC holders an exemption granted by FAA in accordance with the harmonised policy will normally be endorsed by CAA.

Applications for exemptions should normally be made by the TC, STC or major modification approval holders and should, initially, be submitted to their Primary Certificating Authority.

The following factors will be considered when assessing whether granting of an exemption would be in the public’s interest:

- The total world fleet exposure is expected to be small:
• The fleet is small
• The fleet is close to the end of its expected total utilization
  - Mitigating actions have been put in place or identified to address any potential unsafe conditions identified from service experience.
  - There are no fuel tank flammability concerns (no heated tanks)
  - There are compensating factors (e.g. operational restrictions)
  - The TC/STC holder is unable or unwilling to support the level of analysis required by this fuel tank safety policy and denial of the exemption would likely result in the withdrawal of the Type from service.
  - The cost to the operators of establishing full compliance with this fuel tank safety policy is disproportionately high compared with to the risk on safety of the affected aircraft, therefore, continued operation would not be economically viable.

The review should be based on the worldwide fleet.

6 INSTRUCTIONS FOR CONTINUED AIRWORTHINESS
Discussions are continuing with FAA to agree a common process for the implementation of all corrective actions identified by the safety reviews including on-going maintenance activities.

7 CANCELLATION
This Notice cancels Airworthiness Notice No. 55, Issue 1, dated 25 October 2002 which should be destroyed.
Interpretative Material (IM) to INT/POL/25/12

Fuel Tank Safety – Fuel Tank Ignition Sources

1 INTRODUCTION

Service history has shown that ignition sources have developed in aircraft fuel tanks due to unforeseen failure modes or factors that may not have been considered at the time of original certification of the aircraft. The purpose of this material is to provide guidance in order to show compliance with INT/POL/25/12 published by the JAA on 1st of October 2000.

Each applicant should review aircraft service records, flight logs, inspection records, and component supplier service records to assist in establishing any unforeseen failures, wear or other conditions that could result in an ignition source within the fuel system. In addition, in some cases changes to components may have been introduced following certification without consideration of possible effects of the changes to the requirements to preclude ignition sources. Therefore, results of reviewing this service history information and a review of changes to components from the original type design should be documented as part of the fuel tank system design review and safety analysis.

2 BACKGROUND

There are three primary phenomena that can result in ignition of fuel vapours in aeroplane fuel tanks. The first is electrical arcs. The second is friction sparks resulting from mechanical contact of rotating equipment in the fuel tank. The third is hot surface ignition or auto ignition.

The conditions required to ignite fuel vapours from these ignition sources vary with pressures and temperatures within the fuel tank and can be affected by sloshing or spraying of fuel in the tank. Due to the difficulty in predicting fuel tank flammability and eliminating flammable vapours from the fuel tank, design practices have assumed that a flammable fuel air mixture exists in aircraft fuel tanks and require that no ignition sources be present.

Any components located in or adjacent to a fuel tank must be qualified to meet standards that assure, during both normal and failure conditions, ignition of flammable fluid vapours will not occur. This is typically done by a combination of design standards, component testing and analysis. Testing of components to meet explosion proof requirements is carried out for various single and combinations of failures to show that arcing, sparking, auto ignition or flame propagation from the component will not occur. Testing for components has been accomplished using standards and component qualification tests. The standards include for example EUROCAE / RTCA DO160 and BS 3G 100 that defines explosion proof requirements for electrical equipment and analysis of potential electrical arc and friction sparks.

Therefore the focus of this re-evaluation of the aircraft fuel system should be to identify and address potential sources of ignition within fuel tanks, which may not previously have been considered to be unsafe features.
FUEL SYSTEM IGNITION PREVENTION

NO TANK IGNITION SOURCES
INT/POL/25/12

MINIMIZATION OF ELECTRICAL SOURCES WITHIN TANKS

MEET SAFETY OBJECTIVES
JAR 25.901(c)

JAR 25.1309
AMJ 25.1309

HOT SURFACES
requirement
JAR 25.981(a)

FUEL TANK VENT PROTECTION

BONDING AND STATIC CHARGE GENERAL

BONDING AND STATIC CHARGE REFUELLING POINTS

LIGHTNING HIF EMI PROTECTION

ELECTRICAL EQUIPMENT (Explosion Proofness)

INTERNAL ARCS, SPARKS (Intrinsic Safety)

FRICION SPARKS

HOT FILAMENTS

Heat generated in adjacent compartments

External fires

Internally generated heat eg. pump faults

Requirement
JAR 25.963
JAR 25.981

Requirements
JAR 25.1185
JAR 25.1193(e)

Requirement
JAR 25.981

Advisory Material
ACJ 25X899

Requirement
JAR 25.973(d)

Advisory Material
ACJ 25X899

Requirement
JAR 25.954
ACJ 25.954

Standard
DO 160

Silver sulphide
Hot wires

FRICTION SPARKS

ELECTRICAL EQUIPMENT
Explosion Proofness

EXTERNAL ARCS,
SPARKS
(Intrinsic Safety)

HOT SURFACES
requirement
JAR 25.981(a)

INTERNAL ARCS,
SPARKS
(Intrinsic Safety)

HOT SURFACES
requirement
JAR 25.981(a)

EXTERNAL ARCS,
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HOT SURFACES
requirement
JAR 25.981(a)

EXTERNAL ARCS,
SPARKS
(Intrinsic Safety)

FRICTION SPARKS

ELECTRICAL EQUIPMENT
Explosion Proofness

BONDING AND STATIC CHARGE REFUELLING POINTS

BONDING AND STATIC CHARGE GENERAL

FUEL TANK VENT PROTECTION

HOT SURFACES
requirement
JAR 25.981(a)

FRICTION SPARKS

ELECTRICAL EQUIPMENT
Explosion Proofness

EXTERNAL ARCS,
SPARKS
(Intrinsic Safety)

FRICTION SPARKS

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SPARKS
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EXTERNAL ARCS,
SPARKS
(Intrinsic Safety)

FRICTION SPARKS

ELECTRICAL EQUIPMENT
Explosion Proofness

EXTERNAL ARCS,
SPARKS
(Intrinsic Safety)
3 IGNITION SOURCES

3.1 Electrical Arcs and Sparks

Ignition sources from electrical arcs can occur as a result of electrical component and wiring failures, direct and indirect effects of lightning, HIRF / EMI, and static discharges. The level of electrical energy necessary to ignite fuel vapours is defined in various standards. The generally accepted value is 0.2 millijoules. An adequate margin needs to be considered, when evaluating the maximum allowable energy level for the fuel tank design.

3.2 Friction Sparks

Rubbing of metallic surfaces can create friction spark ignition sources. Typically this may result from debris contacting a fuel pump impeller or an impeller contacting the pump casing.

3.3 Hot Surface Ignition

Guidance provided in AC25-8 has defined hot surfaces which come within 30 degrees Centigrade (50°F) of the autogenous ignition temperature of the fuel air mixture for the fluid as ignition sources. It has been accepted that this margin of 30 degrees Centigrade supported compliance with JAR 25.981(a). Surface temperatures not exceeding 200°C have been accepted without further substantiation against current fuel types.

4 LESSONS LEARNED

4.1 Introduction

As detailed above, the fuel system criticality may not have been addressed in the past against current understanding as far as the ignition risk is concerned. Inspections and design review have been performed, resulting in findings detailed below. One of the main lessons learned is to minimize electrical sources within fuel tanks (see paragraph 4.3).

4.2 Components in-service experience

The following sections intend to present a list of faults which have occurred to fuel system components. By its nature it cannot be an exhaustive list, but is only attempting to provide a list of undesirable features of fuel system components that should be avoided when designing fuel tanks.

Pumps

(a) Pump inducer failures have occurred resulting in ingestion of the inducer into the pump impeller and generation of debris into the fuel tank.

(b) Pump inlet check valves have failed resulting in rubbing on pump impeller.

(c) Stator windings have failed during operation of the fuel pump. Subsequent failure of a second phase of the pump caused arcing through the fuel pump housing.

(d) Thermal protective features incorporated into the windings of pumps have been deactivated by inappropriate wrapping of the windings.

(e) Cooling port tubes have been omitted during pump overhaul.

(f) Extended dry running of fuel pumps in empty fuel tanks, violation of manufacturers’ recommended procedures, are suspected causes in two incidents.

(g) Use of steel impellers which might produce sparks if debris enters the pump.

(h) Debris has been found lodged inside pumps.

(i) Pump power supply connectors have corroded allowing fuel leakage and electrical arcing.

(j) Electrical connections within the pump housing have been exposed and designed with inadequate clearance to pump cover resulting in arcing.

(k) Resettable thermal switches resetting at higher trip temperature.

(l) Flame arrestors falling out of their respective mounting.
(m) Internal wires coming in contact with the pump rotating group, energising the rotor and arcing at the impeller / adapter interface.
(n) Poor bonding across component interfaces.
(o) Insufficient ground fault current capability.
(p) Poor bonding of components to structure.
(q) Loads from the aeroplane fuel feed plumbing were transferred.
(r) Premature failure of fuel pump thrust bearings allowing steel rotating parts to contact the steel pump side plate.

Wiring to Pumps located in metallic conduits or adjacent to fuel tank walls
Wear of Teflon sleeving and wiring insulation allowing arcing to conduit causing an ignition source in tank, or arcing to the tank wall.

Fuel Pump Connectors
Electrical arcing at connections within electrical connectors has occurred due to bent pins or corrosion.

FQIS Wiring
Degradation of wire insulation (cracking) and corrosion (copper sulphate deposits) at electrical connectors, unshielded FQIS wires have been routed in wire bundles with high voltage wires.

FQIS Probes
Corrosion and copper sulphide deposits have caused reduced breakdown voltage in FQIS wiring. FQIS wiring clamping features at electrical connections on fuel probes has caused damage to wiring and reduced breakdown voltage. Contamination in the fuel tanks including: steel wool, lock wire, nuts, rivets, bolts; and mechanical impact damage, caused reduced arc path between FQIS probe walls.

Bonding Straps
Corrosion, inappropriately attached connections (loose or improperly grounded attachment points). Static bonds on fuel system plumbing connections inside the fuel tank have been found worn due to mechanical wear of the plumbing from wing movement, and corrosion.

Failed or aged seals
Seal deterioration may result in leaks internal or external to fuel system, as well as fuel spraying.

4.3 Minimizing electrical components hazards within fuel tanks
One of the lessons learned (listed above) is the undesirable presence of electrical components within fuel tanks. Power wiring has been routed in conduits when crossing fuel tanks, however, chaffing has occurred within conduits. It is therefore suggested that such wiring should be routed outside of the fuel tank to the maximum extent possible. At the equipment level, connectors and adjacent area should be taken into account during the explosion proofness qualification of the equipment (typically, pumps).
However, for some wiring, such as FQIS or sensor wiring, it might be unavoidable to route them inside of tanks, and therefore they should be qualified as intrinsically safe. The Safety Assessment section below indicates how any residual fuel tank wiring may be shown to meet the required Safety Objectives.

5 SAFETY ASSESSMENT
5.1 Introduction
The fuel system must comply with JAR 25.901(c), which requires compliance with JAR 25.1309. According to INT/POL/25/12, the applicant should perform a Safety Assessment of the fuel system showing that the presence of an ignition source within the fuel system is Extremely Improbable and does not result from a single failure, as per JAR 25.1309 and the corresponding AMJ 25.1309 principles.
Advisory Material Joint (AMJ) 25.1309, “System Design and Analysis” describes methods for completing system safety assessments (SSA). The depth and scope of an acceptable SSA depends upon the complexity and criticality of the functions performed by the system under consideration, the severity of related failure conditions, the uniqueness of the design and extent of relevant service experience, the number and complexity of the identified causal failure scenarios, and the ability to detect contributing failures. The SSA criteria, process, analysis methods, validation and documentation should be consistent with the guidance material contained in AMJ 25.1309.

Failure rates of fuel system components should be carefully established as required using in-service experience to the maximum extent.

5.2 Assumptions and Boundary Conditions for the Analysis

The analysis should be conducted based upon assumptions described in this section.

(a) Fuel Tank Flammability

The system safety analysis should be prepared considering all aircraft flight and ground conditions, assuming that an explosive fuel air mixture is present in the fuel tanks at all times.

(b) Failure Condition Classification

Unless design features are incorporated that mitigate the hazards resulting from a fuel tank ignition event, (e.g. polyurethane foam), the SSA should assume that the presence of an ignition source is a catastrophic failure condition.

(c) Failure Conditions

The analysis should be conducted assuming deficiencies and anomalies, failure modes identified by the review of service information on other products as far as practical, and any other failure modes identified by the fuel tank system functional hazard assessment. The effects of manufacturing variability, ageing, wear, corrosion, and likely damage should be considered.

In service and production functional tests, component acceptance tests and maintenance checks may be used to substantiate the degree to which these states must be considered. In some cases, for example component bonding or ground paths, a degraded state will not be detectable without periodic functional test of the feature. For these features, inspection/test intervals should be established based on previous service experience on equipment installed in the same environment. If previous experience on similar or identical components is not available, shorter initial inspection/test intervals should be established until design maturity can be assured.

(i) Fuel Pumps

Service experience shows that there have been a significant number of failure modes, which have the capability of creating an ignition source within the tank. Many of these are as the result of single failures, or single failures in combination with latent failures. Where fuel pumps can be uncovered during normal operation, modifications will be required to ensure that pumps do not become uncovered (by fuel) or that pump failures will not cause tank fires or explosions. For the purposes of this Fuel Tank Safety Review, this will not be applied to fuel pumps, which only become uncovered at the point of complete fuel exhaustion.

(ii) Fuel Pump Wiring

Despite precautions to prevent fuel pump wire chafing, arc faults have occurred. For pump wire installations within the tank or adjacent to the tank wall to remain acceptable, additional means must be provided to isolate the electrical supply, in the event of arc faults. The means must be effective in preventing continued arcing to the conduit or the tank wall.

(iii) FQIS Wiring

Although in recent times, constructors have made attempts to segregate FQIS wiring from other aircraft wiring, it is recognised that it is not possible to be
confident, at the design stage, that the segregation will remain effective over the whole fleet life. Subsequent aircraft modifications in service may negate the design intentions. To counter this threat to FQIS wiring, additional design precautions must be provided to positively prevent any unwanted stray currents entering the tank. The precautions taken must remain effective, even following anticipated future modifications.

(iv) Bonding Schemes
Service experience has shown that the required Safety Objectives can be met with a dual, redundant bonding scheme, with appropriate level of inspection. No definitive advice can be given about the inspection period, but it is expected that the design and qualification of the bonding leads and attachments (or alternative bonding means) will be sufficiently robust, so that frequent inspections will not be needed.

(d) External Environment
The severity of the external environmental conditions that should be considered are those established by certification regulations and special conditions (e.g. HIRF, lightning), regardless of the associated probability. For example, the probability of lightning encounter should be assumed to be one.

5.3 Qualitative Safety Assessment
The level of analysis required to show ignition sources will not develop will depend upon the specific design features of the fuel tank system being evaluated. Detailed quantitative analysis should not be necessary if a qualitative safety assessment shows that features incorporated into the fuel tank system design protect against the development of ignition sources within the fuel tank system. For example, if all wiring entering the fuel tanks was shown to have protective features such as separation, shielding or surge suppressors, the compliance demonstration would be limited to demonstrating the effectiveness of the features and defining any long term maintenance requirements so that the protective features are not degraded.

5.4 Component Qualification Review
Qualification of components such as fuel pumps, using the specifications, has not always accounted for unforeseen failures, wear, or inappropriate overhaul or maintenance. Service experience indicates that the explosion proofness demonstration needs to remain effective under all of the continued operating conditions likely to be encountered in service. Therefore an extensive evaluation of the qualification of components may be required if qualitative assessment does not limit the component as a potential ignition source.

5.5 Electrical Sparks
The Applicant should perform a failure analysis of all fuel system and sub systems with wiring routed into fuel tanks. Systems that should be considered include, temperature indication, Fuel Quantity Indication System, Fuel Level sensors, fuel pump power and control indication, and any other wiring routed into or adjacent to fuel tanks. The analysis must consider system level failures and also component level failures mentioned in paragraph 4.2 and discussed below. Component failures, which have been experienced in service, are to be considered as probable single failures. The analysis should include existence of latent failures, such as contamination, damage/pinching of wires during installation or corrosion on the probes, connectors, or wiring and subsequent failures that may lead to an ignition source within the fuel tank. The wire routing, shielding and segregation outside the fuel tanks should also be considered. The evaluation must consider both electrical arcing and localised heating that may result on equipment, fuel quantity indicating system probes, and wiring.

(a) Electrical Short Circuits
   (i) Effects of electrical short circuits, including hot shorts, on equipment and wiring which enter the fuel tanks should be considered, particularly for the fuel quantity indicating system wiring, fuel level sensors and probes.
(ii) The evaluation of electrical short circuits must consider shorts within electrical equipment.

(b) Electromagnetic Effects, including Lightning, EMI, and HIRF

(i) Effects of electrical transients from lightning, EMI or HIRF on equipment and wiring within the fuel tanks should be considered, particularly for the fuel quantity indicating system wiring and probes.

(ii) Latent failures such as shield and termination corrosion, shield damage, and transient limiting device failure should be considered and appropriate indication or inspection intervals established.

(iii) The evaluation of electromagnetic effects from lightning, EMI, or HIRF must be based on the specific electromagnetic environment of a particular aircraft model. Standardized tests such as those in EUROCAE/RTCA DO-160 Sections 19, 20 and 22 are not sufficient alone, without evaluation of the characteristics of the specific electromagnetic environment for a particular aircraft model to show that appropriate standardised DO-160 test procedures and test levels are selected. Simulation of various latent failures of fuel system components within the tanks may be required to demonstrate the transient protection effectiveness.

5.6 Friction Sparks

The analysis should include evaluation of the effects of debris entering the fuel pumps, including any debris that could be generated internally such as any components upstream of the pump inlet. Service experience has shown that pump inlet check valves, inducers, nuts, bolts, rivets, fasteners, sealant, lock wire etc. have been induced into fuel pumps and contacted the impeller. This condition could result in creation of friction sparks and should be an assumed failure condition when conducting the system safety assessment.

6 INSTRUCTIONS FOR CONTINUED AIRWORTHINESS FOR THE FUEL TANK SYSTEM

The analysis conducted to show compliance with INT/POL/25/12 may result in the need to define certain required inspection or maintenance items. Any item that is required to ensure that an ignition source does not develop within the fuel tank or maintain protective features incorporated to preclude a catastrophic fuel tank ignition event must be incorporated in the limitation section of the instructions for continued airworthiness. Also, any information necessary to maintain those design features that have been defined in the original type design to preclude ignition sources should be included in the critical design configuration control limitations. This information is essential to ensure that maintenance, repairs or modifications do not unintentionally violate the integrity of the original fuel system type design. The original design approval holder must define a method of ensuring that this essential information will be evident to those that may perform and approve such repairs and modifications.
As a result of discussions with the industry, the FAA and other regulatory Authorities, it appeared there is a need to establish guidelines in order to determine the existence of potential unsafe conditions resulting from the design reviews conducted as per the JAA recommendation on fuel tank safety.

One of the main outcomes of those discussions was the agreement to take into account the flammable conditions of the air / fuel vapour mixture present within the fuel system. The review of in-service data has shown that incidents or accidents occurred in either heated tanks, or wing tanks fuelled with (higher flammability) JP-4 fuel. As a consequence, it has been decided to differentiate the potential unsafe conditions criteria for tanks exhibiting high flammability exposure (heated tanks) and for tanks having lower flammability characteristics.

Although the basic assumption has always been, that the fuel tanks are assumed to be ‘flammable’, this is not the actual case. Fuel tanks will only be ‘flammable’, in the ambient temperature conditions, at the upper end of declared range - approximately 38°C (100°F) for typical Jet A/A-1 type fuels. Never the less, since some aircraft will continually operate in these climates, the assumption is still a valid one to make.

The criteria given below are not intended to replace the technical material provided in Attachment 1. INT/POL/25/12 and the associated advisory material remain valid and shall be used for conducting the design assessment.

The criteria provide the basis for the initial determination of a potential unsafe condition. They do not provide the entire basis of the decision to be made on the actual implementation of Mandatory corrective action (including compliance time determination) on the aircraft type under consideration. This final decision will be made under the normal processes for the issuing of Mandatory action (FAR/JAR-39).

CRITERIA FOR THE DETERMINATION OF UNSAFE CONDITIONS

In general terms, unsafe condition determination for fuel tank systems can be analyzed by considering four major elements:

1. Single Failure Conditions
2. Combinations of Failures
3. Service Experience; and
4. Relative Flammability Exposure

The following question/answer process may be useful for identification of unsafe conditions:

Element 1: Single failures:

- Is the part, system, or component subject to catastrophic single failure condition (e.g., power wire arc inside fuel tank, lightning induced in-tank arc)?
- Has failure condition been corrected by AD or other mitigation which will provide protection for the operational life of the airplane?

Element 2: Combinations of failures:

- Does a failure condition exist which, in combination with another failure condition(s), result in catastrophic condition?
• Does a redesign, operation, maintenance, and/or inspection requirement exist which mitigates failure condition throughout the operational life of the airplane?

Element 3: Service Experience:
• Does service experience indicate that system or part has developed a condition which is considered unsafe, but not necessarily catastrophic (e.g., leaking fuel pump electrical connector, fuel pump rotor/stator contact)?
• Has action been taken which mitigates condition throughout the operational life of the airplane?

Element 4: Flammability Exposure:
For the purposes of this discussion, a fuel tank’s flammability exposure will be categorized as one of the following:
• Relatively Low Flammability Exposure, or
• Relatively High Flammability Exposure
• Is the flammability exposure of the tank in question relatively high (e.g. heated center tank)?
  - Have all identified single failure conditions been mitigated?
    AND
  - Have all identified foreseeable combination of failures been mitigated?
  OR
• Is flammability exposure relatively low? (e.g. unheated wing tank or heated center tanks with flammability reduction features incorporated that reduce flammability exposure to approx that of an unheated wing tank)
  - Have all identified single failure conditions been mitigated?
    AND
  - Have all known combination of failure conditions been mitigated on the tank in question?

An unsafe condition needing corrective actions exists, if:
Under element 1, 2 or 3 an answer will be “YES/NO”.
Element 4 determines what combination of failures needs to be taken into account.

AD 1. Single failures – all tanks
For any tank (heated or not heated), any single fault that may result in a potential ignition source within the fuel system will be considered as an unsafe condition and must therefore be addressed and corrected.

AD 2. Combination of failures – Low flammability exposure fuel tanks.
“Known” combinations of failures will be considered as unsafe conditions. Known combinations of failures are combinations of failures which have occurred in service and are likely to occur on other products of the same type design plus combinations of failures which have been subject to mandatory corrective actions, following in-service findings, on products with a similar design of fuel system.

“Known” combinations of failure must be addressed and corrected.

AD 2. Combination of failures – High flammability exposure fuel tanks.
For those tanks, a full assessment based upon JAA INT/POL/25/12 edition 1 dated 1st of October 2002, shall be performed. Any non compliance with INT/POL/25/12 will be considered as an unsafe condition.
AD 3. In-service experience – all tanks

For any tank (with a high or low flammability exposure), all faults identified in service, possibly resulting in energy dissipation into the fuel system which could create an ignition hazard, or making fuel tank safety protection devices inoperative (e.g. fuel pump canister, wire sleeving, bonding lead), are considered as unsafe conditions and shall be addressed. Those faults may result from equipment or components failures, aging, as well as production or maintenance errors, and inadequate flight crew actions (such as leaving fuel pumps “on” beyond their anticipated usage as declared in the AFM/FCOM).

AD 4 Assessing the flammability exposure of a fuel tank

The flammability exposure of a fuel tank is driven by environmental conditions (temperature, pressure) and fuel properties.

For the purpose of the assessment of in-service aircraft, a three steps approach has been agreed between FAA and JAA.

Flowchart for determining the high/low flammability exposure of a fuel tank
(see next page for details of steps 1, 2 and 3)
Characteristics of a Low Flammability Tank

For Step 1:
The inspection/design review criteria for a low flammability tank are:

1. A fuel temperature rise of less than 5.5°C (10°F) on the ground, with a 37.8°C (100°F) ambient temperature, considering a ground operation period of at least four hours. Heat inputs to be addressed are any airplane based heat sources, both internal and external to the tank, including heat transfer from an adjacent tank that could heat the subject tank; and

2. The ability to reject heat quickly to outside air. A conventional aluminum skin stringer construction with a high percentage (80 to 90%) of the tank surfaces exposed to free stream air will satisfy this criterion.

For Step 2:
The quantitative criteria for a low flammability tank are:

1. A fuel temperature rise of less than 5.5°C (10°F) on the ground, with a 37.8°C (100°F) ambient temperature, considering a ground operation period of at least four hours. Heat inputs to be addressed are any airplane based heat sources, both internal and external to the tank, including heat transfer from an adjacent tank that could heat the subject tank; and

2. Initial cruise fuel cooling rates of 11.1°C (20°F) per hour, with tank 80% full, and 19.5°C (35°F) per hour with tank empty, starting from a fuel temperature of 15.5°C (60°F), and TAT of -28.9°C (-20°F); and

3. The fuel temperature at the end of a maximum range cruise shall be within 5.5°C (10°F) of TAT.

For Step 3:
The criteria for a low flammability tank are:

1. Has a Fleet Average Flammability exposure of less than 7% using the FAA Monte Carlo Model; and

2. A fuel temperature rise of less than 11.1°C (20°F) on the ground, with a 37.8°C (100°F) ambient temperature, considering a ground operation period of at least four hours. Heat inputs to be addressed are any airplane based heat sources, both internal and external to the tank, including heat transfer from an adjacent tank that could heat the subject tank.

If a tank does not meet the above criteria it will be classified as a High Flammability Tank for the purpose of making unsafe condition findings.

Flammability mitigation devices:
The introduction of any flammability reduction device (such as inerting, foam, etc), and the credit possibly given to such devices regarding the ignition unsafe conditions, will be reviewed by JAA on a case by case basis.

Adjacent systems & areas to fuel tanks
Areas adjacent to any fuel tanks, or areas likely to be contaminated by fuel leaks or vapours, shall be reviewed to determine if any unsafe conditions may exist. The existence of an unsafe conditions should be determined based upon the probability of a leak (taking into account in-service experience, mitigating factors, such as double walling, protective coating, etc), and considering the potential ignition sources and the design precautions taken in the area (component qualification, drainage, ventilation).
Emergency Floor Path Lighting System

1 This Notice provides additional information on the installation of an Emergency Floor Path Lighting System required by the Air Navigation Order Schedule 4, scale Z(iii).

2 INTERPRETATION OF REQUIREMENTS

2.1 The following guidance information is provided with the objective of ensuring a consistent and uniform interpretation of the emergency floor path lighting system requirements.

2.2 The markings and illumination provided should enable the passenger to visually identify the escape path along the cabin aisle floor.

NOTE: It is not necessary to provide visual guidance to enable passengers to move from their seat to the cabin aisle.

2.3 The illumination should be of sufficient intensity to enable the passenger to identify features bounding the cabin aisle.

2.4 Where exits are to be found in one direction only, the system should not tend to lead the passenger toward the end of the cabin where there are no exits.

2.5 The escape path markings, coupled with exit markings, should be so arranged that a passenger will not tend to proceed along the cabin aisle past any available exits. It is recommended that conspicuous markers be placed at the point of access from the cabin aisle to the exit.

2.6 Exit Identification

2.6.1 Only those exits which are either ‘designated’ emergency exits or ‘excess’ emergency exits should be identified by the emergency floor path lighting system.

NOTE: ‘Designated’ emergency exits are the minimum required for the certificated passenger capacity. ‘Excess’ emergency exits are additional exits to the minimum required which satisfy the same arrangement, marking and lighting requirements as for designated exits and which are also readily accessible.

2.6.2 The exit should be positively identifiable to enable a passenger to proceed to it without hesitation in conditions where the exit is either open or closed. All exits likely to be available for use in an emergency should, therefore, have exit identifiers.

2.6.3 Exit identifiers of floor level exits need to be located so that they can be seen directly when adjacent to the last aisle marker, or in the case of a flood-lit system, within the flood-lit zone, and viewed on the vertical centre line of the aisle at a height no more than 4 feet above the cabin floor level. Additional cues to a passenger may, however, be provided as an alternative such as horizontally mounted exit identifiers located on an aft or forward bulkhead in the vestibule leading to an exit and within direct line of sight of a passenger when approaching the vestibules from the aisle.

2.6.4 Exit identifiers should, wherever practicable, be located at such a distance from the floor that they will not be obscured by any strewn hand baggage likely to be present in an emergency evacuation. It is, therefore, recommended that exit identifiers be located between 18 inches and 4 feet above the cabin floor level.

2.6.5 Where exit identifiers are mounted on cabin sidewalls and located close to passenger seats, they should be visible from the aisle with the seat next to the identifier occupied.
This takes account of a passenger seated next to an exit being incapacitated. (A passenger slumped forward or sideways should also be considered.)

2.7 Escape Path Markings along Cabin Aisle Floor
2.7.1 Where single point incandescent type or electroluminescent strip type floor track markers are employed, the CAA recommends a distance between markers no greater than 20 inches (thus permitting a maximum distance between markers of 40 inches under typical Minimum Equipment List (MEL) conditions).

NOTE: Where incandescent lights are installed on the side of seats the distance between lights should not exceed 40 inches.

2.7.2 Floor track cabin aisle markers should be clearly visible when viewed from the aisle centre line at a height of 4 feet above the cabin floor.

2.7.3 At each end of a passenger cabin it is recommended that there are red/orange floor track cabin aisle markers (either, at least two closely spaced incandescent markers or, a short length of electroluminescent strip) to highlight clearly the ends of the aisle.

2.8 Escape Path ‘Flood Lighting’ of Cabin Aisle
2.8.1 Where a ‘flood lighting’ system is employed the maximum distance between light sources is to be agreed with the CAA and this will be dependant upon the intensity and distribution of light available.

2.9 Aisle Cues for Overwing Exits
2.9.1 Floor track marking system aisle cues for overwing exits are recommended to comprise three, with a minimum of two, closely spaced red/orange markers or a suitable length of red/orange strip-lighting, adjacent to the access route to overwing exits.

2.9.2 Where access to an overwing exit is achieved by a dual access route, the aisle cues should be located at the entrance to both access routes or be located so as not to bias one route when compared with the other.

2.9.3 Escape Path flood lighting systems do not normally provide adequate aisle cues for overwing exits and should be complemented by the provision of some discrete cues so located that they can be seen by a passenger at a maximum height of 4 feet above the cabin floor when moving down the aisle (strobe lights are not considered to be effective cues, especially when smoke is present).

2.10 Cross Aisle Escape Path Markings
A similar level of floor proximity escape path marking/illumination should be provided in cross aisles on multi-aisle aircraft to that provided for the cabin main aisles.

2.11 The 25 Percent Rule
2.11.1 Each escape path marking system is required to meet existing FAR/JAR 25.812 requirements. In particular, FAR/JAR 25.812(11)(1) requires that not more than 25 percent of the escape path marking system lights are rendered inoperative after any single transverse vertical separation.

2.11.2 For systems in which the lights are controlled by remote transmitters there must be sufficient transmitters installed to ensure that the FAR/JAR 25.812(11)(1) requirement can be met even though, in a crash, there may be a considerable distance between the two vertically separated parts of the fuselage.

3 EVALUATIONS
3.1 The means provided in showing compliance with the requirement of the ANO shall be the subject of an evaluation by the CAA. In addition, all concepts not already approved shall be the subject of a demonstration to determine both the strengths and weaknesses of a particular system.

3.2 Engineering evaluations and demonstration tests should be conducted in conditions of darkness either at night or where conditions have been simulated by preventing daylight from entering through windows or through exits whether open or closed.
3.3 Where it is intended that an aircraft’s MEL is to permit continued operation of the aircraft with some elements of the system unserviceable, the test subject demonstration should be conducted with the system configured so as to simulate the relevant MEL standard.

3.4 A demonstration should clearly show, to the satisfaction of the CAA, that test subjects, on leaving their seat in any part of the passenger compartment and entering the cabin aisle, can, using the visible signs and markings, immediately determine in which direction(s) exits are to be found using visual references only.

3.5 The demonstration is intended to establish that there are adequate visual references which will provide the necessary orientation of the passengers. It is not necessary to assess the passenger evacuation rate under these conditions. Obstructions created by loose cabin baggage, etc., need not, therefore, be simulated, except in so far as baggage might interfere with an illumination system.

3.6 In assessing the effectiveness of all visual cues, the existing emergency lighting system which provides illumination from locations more than 4 feet above the cabin aisle floor, must be switched off. It is not intended that the test should be performed in conditions of smoke but simply taking into account its blanketing effect. Therefore, care needs to be taken to ensure that, in the absence of an overlaying smoke, the floor proximity system is prevented from illuminating and hence reflecting light from parts of the cabin above the 4 foot level.

3.7 Test subjects should not have detailed knowledge of the aircraft other than that obtainable from a study of the normal Passenger Safety Leaflet. The total number of test subjects is not critical but they should be adults and should include both males and females over 60 years of age.

3.8 The precise details of any demonstration should be discussed and agreed with the CAA but should include consideration of the following:

In each demonstration, the test subject acting alone and without any assistance should be able:

(a) to leave the seat or seat row and enter the cabin aisle;
(b) standing or stooping in the aisle and making use of the visual reference to the floor proximity marking system, to identify and locate the first exit or pair of exits either forward or aft (where appropriate);
(c) to proceed to the particular exit(s), without significant hesitation or evidence of confusion, making all exit identifications by reference only to visible features not more than 4 feet above the cabin floor.

After each test, the test subject should indicate to the observers the means by which the exit was located.

3.9 A sufficient number of tests should be performed to ensure that, at least, one exit of each type in the passenger cabin has been identified with the exit both open and closed using the associated marking systems. (Safety precautions should be taken particularly for any demonstration involving open exits).

4 CANCELLATION

This Notice cancels Airworthiness Notice No. 56, Issue 3, dated 25 October 1991, which should be destroyed.
Toilet Flush Motors

1 INTRODUCTION One fatal accident and other incidents have occurred in recent years involving toilet fires, the exact cause of which could not be determined. Investigations of these incidents have not been able to rule out the possibility that fires may have been started by toilet flush motor failures which caused dangerous overheating. These findings, when considered with evidence from toilet flush motors which have failed and suffered damage due to overheating, has led the CAA to publish the requirements of this Notice, for the retrospective modification of those aircraft fitted with electric flush motors which do not already have suitable overheat protection. The relevant Airworthiness Requirements being invoked are BCAR Section D, Chapter D6-13 paragraphs 2 and 6.6 and JAR 25X1499. Reference should also be made to AMJ 25.1309(b).

2 REQUIREMENT

2.1 For all aircraft above 5700 kg MTWA certificated in the Transport or Private Categories and which have electric toilet flush motor systems installed, compliance with paragraph 2.2 or 2.3 of this Notice, or with a CAA approved alternative providing an equivalent level of airworthiness, is required as soon as practical but not later than 1 April 1986.

2.2 Unless it can be shown that:

(a) any failure of the control circuit or its associated components which causes the motor to run continuously will not create an overheat condition such as to create a smoke or fire hazard, and

(b) failures within the motor or pump which would result in such an overheat condition will cause the supply circuit protection to operate,

then compliance with paragraph 2.3 of this Notice is required.

2.3 Electric toilet flush motors must be fitted with a suitable thermal protection device to prevent them over-heating such as to create a smoke or fire hazard, due to failures of the control circuit, control circuit components, motor or pump.

3 ADDITIONAL INFORMATION

3.1 The following should be taken into consideration when establishing compliance with this Notice:

(a) Failures of any automatic control systems, e.g. automatic timer systems, which may cause the motor pump to run continuously.

(b) Short circuit failures of motor windings to each other or to the motor case.

(c) Open circuit of one phase on multi-phase motors.

(d) Motor or pump bearing failures.

(e) Motor or pump seizures.

(f) The proximity of flammable materials or fluids to the motor.

(g) The proximity of other aircraft installations to the motor.
3.2 Owners and operators are recommended to contact the constructor or main agent for information regarding the implementation of the intent of this Notice and regarding the corresponding modifications which may be required.

4 CANCELLATION This Notice cancels Airworthiness Notice No. 57 Issue 1, dated 1 April 1985, which should be destroyed.
1 INTRODUCTION

1.1 The detailed requirements for compartment design safety precautions for aircraft designed in the United Kingdom are prescribed in British Civil Airworthiness Requirements (BCAR) Chapters D4-3, K4-3, G4-3 and Joint Aviation Requirements (JAR) 23.853, 25.853, 27.853 and 29.853. Suitable methods of flame resistance testing of aircraft furnishing materials are described in Appendix F to JAR-25.

1.2 Some imported foreign constructed aircraft are accepted for UK certification through compliance with the airworthiness standards of the country of manufacture. These standards may not be identical to either BCAR or JAR but are considered to provide acceptable levels of safety in relation to the particular aircraft types.

1.3 Materials used when carrying out repairs or modifications to an aircraft cabin furnishings are also required to have flame resistant properties, which are either at least equal to those of the materials used in the original design as accepted for UK certification, or in compliance with the current or UK equivalent requirements.

2 REQUIREMENTS FOR INITIAL ACCEPTANCE OF MATERIALS

Wherever possible only inherently flame resistant materials shall be used. However, materials which meet the requirements by the use of a flame retardant process, applied either during or after manufacture, may also be used provided that (since all materials may at some time be dry-cleaned or washed) the material is shown to be flame resistant when tested both before and after being subjected to three representative cleaning processes.

3 REQUIREMENTS FOR MAINTENANCE OF FIRE RESISTANCE

3.1 Continuance of the flame resistance properties of furnishing materials may depend upon their use in service and the methods used in their cleaning. Experience has shown that:

(a) The proprietary flame retardant processes often applied to furnishing materials during or after manufacture, in order to provide the necessary flame resistant properties, may be destroyed or seriously impaired where incorrect dry cleaning, laundering or proprietary finishing processes which enhance durability and minimise soiling, are used.

(b) The application of one flame retardant process on top of another of a different type, may have the effect of inhibiting the properties of both processes.

(c) During service, seat covers become contaminated with perspiration which leaves a deposit of body salts, etc., these deposits may accumulate, impairing the flame resistance properties of the materials.

(d) Disinfectants, etc., are often sprayed from aerosol containers in aircraft cabins. The accumulation of these agents may also affect the long term flame resistant properties of the furnishing materials.

3.2 Operators and maintenance Organisations are reminded, therefore, that they must have adequate control over the cleaning of aircraft furnishing materials. For this, they need to have a knowledge of the material type, the recommended cleaning or proprietary finishing
processing methods, the effects of time in service on the flame resistance properties, the flame retardant processes applied, if any, and the method of re-application of such a process, where this is necessary. It is not acceptable to place reliance on unsubstantiated claims concerning the continuance of flame resistant properties of a material after durability or additional flame retarded processes have been applied. Where such processes have been applied, there is a need to prove the continued acceptability of a particular material or process in service, and, therefore, further flame resistance tests must be conducted in accordance with requirements identified in paragraphs 1.1 and 1.2 of this Notice and, where applicable, Airworthiness Notice No. 59.

4 CANCELLATION

This Notice cancels Airworthiness Notice No. 58, Issue 5, dated 29 October 2001, which should be destroyed.
Aircraft Seats And Berths – Resistance To Fire

1 APPLICABILITY

1.1 This Airworthiness Notice is applicable to all seats and berths (except seats located within the flight deck) installed in UK registered aircraft (aeroplanes and rotorcraft) over 5700 kg MTWA, certified in the Transport Category (Passenger) of a type for which a Type Certificate was issued (whether in the UK or elsewhere) on or after 1 January 1958.

1.2 For the purpose of this Notice the term berths is taken to include such items as:
   (a) berth and stretcher mattresses,
   (b) couch cushion assemblies,
   (c) other similar upholstery assemblies.

2 INTRODUCTION

2.1 Research into post-crash fire survivability has demonstrated that the overall flammability of seat upholstery materials is an important, and in many cases a dominant, factor in the rate at which a fire spreads through a cabin. Present-day seat cushions are typically constructed of flame-resistant polyurethane foam over which there is an upholstery covering. Both in the FAA fire programme and in a related UK programme at the Fire Research Station at Boreham Wood, fire tests have clearly demonstrated how, by encapsulating the seat cushion with a fire-blocking layer, the onset of ignition of the foam core can be delayed and thereby survival time within the fuselage can be extended.

2.2 Several small-scale test methods have been used during the various programmes to assess the fire performance of seat cushions and some have been correlated to full-scale fuselage fire tests. The FAA, however, has chosen a 2 gallon (US)/hour kerosene burner as its test standard as it is also used by the American Industry for the qualification of flexible hydraulic and fuel hoses, required to be resistant to fire. In this seat cushion test the burner is the fire source and the fire contribution of a seat cushion system (squab and back support) is assessed in a stylised form by measuring fire spread and percentage weight loss of the seat specimen during a 2 minute period of exposure to the test flame.

2.3 For those aircraft defined in paragraph 1 already in service, or to be introduced into service, the CAA intends, by this Notice, to require, in similar manner to that defined in FAR 121.312(b) (Amendment 121-184), that such aircraft shall be equipped with seats and berths (except seats located within the flight deck) which comply with this new standard. See also JAR 26.150(b).

3 COMPLIANCE

3.1 With effect from 1 July 1987 all affected seats and berths fitted to aircraft defined in paragraph 1 above, shall comply with the requirements of this Notice.

3.2 With effect from 1 July 1986 all aircraft seats newly manufactured and which are intended for use on aircraft defined in paragraph 1 above shall also comply with the requirements of this Notice.
4 REQUIREMENTS

4.1 In addition to meeting the existing flammability requirements of BCAR Section D, Chapter D4-3, paragraph 9, BCAR Section G, Chapter G4-3, paragraph 9, JAR 25.853 or JAR 29.853, as applicable, each seat cushion (squab and back support), except those fitted to seats located within the flight deck, and berths, shall meet the requirements of JAR-25, Appendix F, Part II, FAR Part 25, Appendix F, Part II (at Amendment No. 25-59) or an equivalent fire test criteria agreed with the CAA.

5 ADDITIONAL INFORMATION

5.1 The CAA has, in its research effort into this subject, been evaluating alternative test methods and should be consulted at an early date if alternative methods are to be used.

5.2 All FAA regulations relating to this subject are obtainable through the CAA and will be made available on request.

6 CANCELLATION This Notice cancels Airworthiness Notice No. 59, Issue 3, dated 10 December 1986, which should be destroyed.
Cabin And Toilet Fire Protection

1 APPLICABILITY This Airworthiness Notice is applicable to all UK registered aircraft (aeroplanes and rotorcraft) over 5700 kg MTWA, certificated in the Transport Category (Passenger) for 20 or more passengers.

2 INTRODUCTION
2.1 In 1974 the CAA issued Airworthiness Notice No. 83, which required a re-assessment of the design, construction and location of waste receptacles in toilet compartments, and the prohibition of smoking in such compartments. This action, followed an accident in which a fire in a waste receptacle was uncontained and developed into a major in-flight, and subsequently a post-crash, fire with a high number of fatalities.

2.2 Following a more recent in-flight fire resulting in several fatalities, the CAA conducted a ramp inspection of aircraft toilet compartments during aircraft turnaround and concluded that despite the modifications introduced as a result of Airworthiness Notice No. 83, in-service deterioration could well negate the fire containment capabilities of waste receptacles.

2.3 The purpose of this Notice is to publish requirements for the provision of:
(a) smoke detection in each toilet compartment;
(b) a minimum number of passenger-cabin-mounted Halon 1211 (BCF) fire extinguishers;
(c) an increase in the minimum number of handheld fire extinguishers in the passenger cabin.

2.4 This Notice is complementary to Airworthiness Notice No. 83 Fire Precautions – Aircraft Toilets and takes into account FAR Part 121.308 and 121.309 (Amendment 121-185). It also equates to JAR 25.854, JAR 29.853(f), JAR OPS 1.790 and JAR OPS 3.790.

3 COMPLIANCE
3.1 With effect from 1 October 1987 all aircraft defined in paragraph 1 above shall comply with the requirement of paragraph 4.1 of this Notice.

3.2 With effect from 1 October 1986 all aircraft defined in paragraph 1 above shall comply with the requirements of paragraphs 4.2 and 4.3 of this Notice.

4 REQUIREMENTS
4.1 Where appropriate, each toilet compartment shall be equipped with a smoke detection system approved, in accordance with the requirements of BCAR Sections A or B, Chapter A4-8 or B4-8 or JAR-21 Subparts E or K, which provide a warning light and/or aural warning in the passenger cabin, so located as to be readily seen or heard by a flight attendant performing his normal duties throughout the flight, and/or a warning light on the flight deck.

4.2 In addition to the extinguishers provided for use in the flight deck, accessible cargo compartments and upper and lower deck galleys, there shall be at least the following number of approved handheld fire extinguishers strategically located throughout the passenger compartment:
Passenger Seating Capacity  

<table>
<thead>
<tr>
<th>Capacity</th>
<th>No. of extinguishers</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 60</td>
<td>2</td>
</tr>
<tr>
<td>61 – 200</td>
<td>3</td>
</tr>
<tr>
<td>201 – 300</td>
<td>4</td>
</tr>
<tr>
<td>301 – 400</td>
<td>5</td>
</tr>
<tr>
<td>401 – 500</td>
<td>6</td>
</tr>
<tr>
<td>501 – 600</td>
<td>7</td>
</tr>
<tr>
<td>601 or more</td>
<td>8</td>
</tr>
</tbody>
</table>

4.3 At least half, but not less than two, of the required handheld fire extinguishers installed in the passenger cabin shall contain HALON 1211 (bromochlorodifluomethane BCF) or its equivalent as the extinguishing agent.

5 ADDITIONAL INFORMATION

5.1 Compliance with the FAR Part 121.308 and 121.309 (Amendment 121-185) will satisfy the requirements of this Notice provided the smoke detection system called for in 121.308 is of a type which would meet the requirements of BCAR Section A, Chapter A4-8 or BCAR Section B, Chapter B4-8 or JAR-21 Subparts E or K, as appropriate.

5.2 The built-in fire extinguishers called for in FAR Part 121.308 for each toilet compartment waste receptacle for the disposal of towels, paper and waste although not required by this Notice, are nevertheless, recommended. They are however required by JAR 25.854.

5.3 It is recommended that, wherever possible, the use of access points and/or built-in distribution spray systems should be provided so as to ensure an effective distribution of extinguishant from a handheld fire extinguisher into toilet compartment waste receptacles and adjacent regions.

6 CANCELLATION This Notice cancels Airworthiness Notice No. 60 Issue 1, dated 1 July 1986, which should be destroyed.
Improved Flammability Test Standards For Cabin Interior Materials

1 APPLICABILITY
This Airworthiness Notice is applicable to all UK registered aeroplanes over 5700 kg MTWA, certificated in the Transport Category (Passenger) to carry 20 or more passengers and of a type for which a Type Certificate was issued (whether in the UK or elsewhere) on or after 1 January 1958.

2 INTRODUCTION
2.1 Analysis of aircraft accidents in which cabin fire has been a major factor has indicated to both the FAA and the CAA that currently approved cabin interior materials should meet more severe flammability test standards to reduce the risk of an uncontrolled in-flight cabin fire and extend the survival time in a ground fire emergency.

2.2 Cabin interior material flammability, smoke and toxic emissions are some of the critical factors which affect cabin occupant survivability. Over the past twenty years there has been extensive research carried out, particularly in the USA, in an attempt to quantify the hazards and to define meaningful test methods and airworthiness standards.

2.3 Recent FAA research work, involving full scale fire tests, has established a significant correlation between flammability characteristics and both smoke and toxic emissions. As a result they have placed great emphasis on the introduction of fire-hardened materials into aircraft (i.e. materials with higher ignition temperatures, reduced heat release rates and lower content of thermally unstable components). The CAA supports this approach and has already issued the more severe flammability test standards for aircraft seat and berth cushions (Airworthiness Notice No. 59).

2.4 The FAA (Docket No. 24594) had amended FAR Part 25 and 121 (Amendments 25-61 and 121-189 respectively) to require a new flammability test standard for cabin sidewalls, ceilings, stowages, partitions, galleys, etc. As a result of an extended comment period, FAA Docket No. 24594 has been further revised and now amends FAR Parts 25 and 121 at Amendments 25-66 and 121-198 respectively. Similar amendments have now been incorporated in JAR-25 at Change 13. This new test standard sets a limit for the heat release rate and smoke emission from cabin materials when exposed to a source of radiant heat. Using the modified Ohio State University (OSU) rate of heat release apparatus for Heat Release Rate, testing has been adopted by the FAA because of its good correlation with full-scale fire tests. The modified NBS smoke chamber is used for smoke emission testing.

2.5 The CAA is in full agreement with the new FAA flammability and smoke emission test standards introduced by FAR Amendments 25-61 and 121-189 as amended by 25-66 and 121-198 and intends, by this Notice, to require the same standards for those aeroplanes defined in paragraph 1.

2.6 Under the provision of this Notice, aircraft already in service may continue without incorporating materials which comply with the new flammability and smoke emission test standards until such a time as the cabin interior is substantially renewed. In due course the CAA may consider it necessary to propose dates by which all aircraft shall be in compliance.
3 COMPLIANCE

3.1 With effect from 20 August 1988, but prior to 20 August 1990, all aeroplanes defined in paragraph 1 above, which are either newly manufactured or are the subject of a substantially complete cabin interior renewal, shall comply with the requirements of paragraph 4.1 of this Notice.

3.2 With effect from 20 August 1990, all aeroplanes defined in paragraph 1 above, which are either newly manufactured or are the subject of a substantially complete cabin interior renewal, shall comply with the requirements of paragraph 4.2 of this Notice.

3.2.1 The CAA may be prepared to grant a dispensation for specific components of the cabin interior which do not meet the applicable flammability and smoke emission requirements, provided that special circumstances exist which makes compliance impractical. Such dispensations will be limited to aircraft which are newly manufactured or the subject of a substantially complete cabin interior renewal before 20 August 1991.

3.2.2 A request for such a dispensation must include full details of the steps being taken to achieve compliance, acceptable reasons for such non-compliance and a thorough and accurate analysis of each component.

4 REQUIREMENTS

4.1 In addition to meeting the existing flammability test standards contained in BCAR Chapter D4-3, paragraph 6.1 or JAR 25.853, cabin interior ceiling and wall panels (other than lighting lenses), partitions, and the outer surfaces of galleys, large cabinets and stowage compartments (other than underseat stowage compartments and compartments for stowing small items such as magazines and maps), shall satisfy the test standards of Part IV of Appendix F of JAR-25, except that the total heat release over the first two minutes of sample exposure shall not exceed 100 kilowatt-minutes per square metre, and the peak heat release rate shall not exceed 100 kilowatts per square metre.

4.2 In addition to meeting the existing flammability test standards contained in BCAR Chapter D4-3, paragraph 6.1 or JAR 25.853, cabin interior ceiling and wall panels (other than lighting lenses), partitions, and the outer surfaces of galleys, large cabinets and stowage compartments (other than underseat stowage compartments and compartments for stowing small items such as magazines and maps), shall satisfy the test standards of Part IV and V of Appendix F of JAR-25.

5 ADDITIONAL INFORMATION

5.1 For the purpose of this Notice, the term ‘substantially complete cabin interior renewal’, has been used to cover the renewal of all sidewall panels, ceiling panels and/or overhead stowages, whether this is done at one refurbishment or progressively over a period of time as part of a planned cabin interior renewal programme.

5.2 The requirements of this Notice are not applicable to individual cabin interior components which are refurbished or have to be replaced due to unserviceability, e.g. individual sidewall or ceiling panels or overhead stowage doors. However, where these components are newly manufactured the CAA strongly recommends that they should meet the appropriate requirements of this Notice.

5.3 The requirements of this Notice are not normally applicable to the internal structures of galleys and overhead stowages, floor panels and floor coverings, transparent or translucent components such as lenses used in interior lights, illuminated signs and window anti-scratch panels, and other small cabin items such as door and window mouldings, curtains, window shades, seat trays, arm rests and parts of the passenger service units but see ACJ 25.853. However, these requirements would be applicable to large surface panels of passenger service units.

5.4 If there is any uncertainty as to the applicability of this Notice the CAA should be consulted for clarification.

6 CANCELLATION

This Notice cancels Airworthiness Notice No. 61, Issue 2, dated 18 March 1991, which should be destroyed.
Fatigue Lives

1 For fatigue reasons the major components (e.g. wings and centre-sections) of certain types of aircraft have lives restricted to a specific number of flying hours, flight or landings. These restrictions have, in the main, been confined to large transport type aircraft but more recently it has been found necessary to introduce similar restrictions on certain smaller types of aircraft, some of which are operated in the Private Category.

2 The ‘lifing’ of components is intended to prevent structural failure under the action of repeated air and ground loads experienced in service, the lives being based on the results of tests carried out by the manufacturers of the aircraft. If the specified fatigue life of a critical component is exceeded, the possibility arises of catastrophic structural failure. Where fatigue lives have been imposed, full details have been published by individual manufacturers in their Service Bulletins and compliance with such information is required by the CAA. Structural Life limitations are determined for Likely Average utilisation of a type of aircraft. Any operations which depart substantially from the typical, require reassessment of the structural life limitations for those specific operations and may require alteration in the Safe Fatigue Lives. Examples of operations in this category are low level flights in a maritime surveillance, or geological survey role (particularly using pressurised aircraft), or long endurance operations.

3 For the purpose of establishing structural life limitations a landing is defined as an occasion when the main undercarriage wheels make contact with the airfield surface and lift is significantly destroyed. A flight is associated with each landing and, therefore, the total number of flights pressurised and unpressurised is equal to the total number of landings. A pressurised flight is one in which the aircraft’s pressurisation system is operated at a pressure differential of 14 kN/m² (2 lb/in²) or above.

4 Because of the transfer of components from one aircraft to another, it has, in some instances, been impossible to establish the remaining safe life of individual components. For this reason it is necessary to ensure that when a component in this category is installed in an aircraft, a record is kept with the aircraft documents showing, as applicable, the hours flown and number of flights or landings already sustained by the component at the time of installation. In the case of pressurised flights the applicable pressure differential may be significant. Certificates of Release to Service may not be signed until the signatory is satisfied that the required history of the component has been established.

5 Failure to comply with the above procedure may, due to the absence of evidence showing that the components in question have any remaining safe life, result in owners or operators being required to replace such components prematurely.

NOTE: In addition to recording operating hours of Engines, Auxiliary Power Units and Propellers, the CAA require on most engines, auxiliary power units and propellers that a record be kept of cycles completed. Cycles are defined by the Manufacturer of each engine, auxiliary power unit and propeller. (See Airworthiness Notice No. 44 for engines.)
6 CANCELLATION

This Notice cancels Airworthiness Notice No. 62, Issue 2, dated 1 April 1969, which should be destroyed.
Light Aircraft Maintenance Schedule

1 PURPOSE

The purpose of this Airworthiness Notice is:

(a) To advise aircraft owners, operators, maintenance organisations and licensed aircraft maintenance engineers of the re-issue of the Light Aircraft Maintenance Schedule (LAMS).

(b) To grant approval of Light Aircraft Maintenance Schedules CAA/LAMS/A/1999 and CAA/LAMS/H/1999.

(c) To revoke the approval of Light Aircraft Maintenance Schedules CAA/LAMS/FW/1978 and CAA/LAMS/H/1978.

(d) To summarise changes to the re-issued LAMS.

2 INTRODUCTION

2.1 The CAA has carried out a review of the LAMS Fixed Wing CAA/LAMS/FW/1978 and LAMS Rotary Wing CAA/LAMS/H/1978 both at Issue 2. This review considered the following factors related to light aircraft:

- Age Profile.
- Findings from AN No. 30 CAA Aircraft Survey Programme.
- Utilisation.
- Maintenance related occurrences.
- AAIB Safety recommendations.
- Representations made to the CAA from aircraft owners, operators and maintenance personnel.

2.2 This review has resulted in the following revisions:-

- Removal of applicability for turbine engined aircraft.
- Aircraft applicability classified under commercial air transport and non-commercial air transport.
- Acceptance as part of a JAR-OPS approved maintenance programme.
- Introduction of a 50 hour/6 month check for all aircraft categories.
- Removal of Section 9 listing of Placards and Notice Requirements.
- Removal of Sections 10 and 11 listing of Mandatory Requirements, Supplementary Inspections and Servicing.
- Schedule task pages reproduced in ‘worksheet’ format.
- Introduction of general inspection standards and practices recommended by the organisation responsible for the type design.
- Introduction of human factor principles throughout.
- Available in both A4 and A5 size.
3 GRANT OF APPROVAL

3.1 The Civil Aviation Authority (the CAA) hereby approves, pursuant to Article 10(1) (a) of the Air Navigation Order 2000, the following light aircraft maintenance schedules:-

CAA/LAMS/A/1999 Issue 1 in relation to piston engined aeroplanes not exceeding 2730 kg Maximum Total Weight Authorised

and

CAA/LAMS/H/1999 Issue 1 in relation to piston engined helicopters not exceeding 2730 kg Maximum Total Weight Authorised.

3.2 This approval shall come into force on 1 June 1999.

4 REVOCATION OF APPROVAL

4.1 The Civil Aviation Authority (the CAA), in exercise of its powers under Article 81(1) of the Air Navigation Order 2000 (the Order), hereby varies the approval granted pursuant to Article 10(1) (a) of the Order in respect of LAMS CAA/LAMS/FW/1978 Issue 2 and LAMS CAA/LAMS/H/1978 Issue 2 (the Approved Schedules) by adding the following conditions:

The Approved Schedules shall not be used for the scheduled maintenance of any piston engined aircraft in respect of its next annual check on or following 1 June 1999 or thereafter.

The Approved Schedules shall not be used for the scheduled maintenance of any turbine engined aircraft in respect of its next annual check coincident with a star inspection on or following 1 June 1999 or thereafter.

4.2 The CAA, in exercise of its powers under Article 81(1) of the Order hereby revokes the Approval of the Approved Schedules CAA/LAMS/FW/1978 Issue 2 and CAA/LAMS/H/1978 Issue 2 with effect from 1 June 2002.

5 ADDITIONAL INFORMATION

5.1 Copies of the appropriate re-issued LAMS in A5 size will be posted to aircraft registered owners prior to the effective compliance date. Copies of the re-issued LAMS in A4 size may be purchased from Documedia Solutions Limited, 37 Windsor Street, Cheltenham, Glos. GL52 2DG. Tel. No. 01242 235151, Fax No. 01242 584139.

5.2 CAP 520 Light Aircraft Maintenance: General Guidance on the Implementation of LAMS, has been revised and raised to Issue 3 and may be purchased from Documedia Solutions Limited at the above address.

5.3 Alternative maintenance schedules to LAMS will continue to be approved in accordance with British Civil Airworthiness Requirements Chapter A/B7-5.

5.4 Turbine engined aircraft previously maintained in accordance with maintenance schedules CAA/LAMS/H/1978 Issue 2 or CAA/LAMS/FW/1978 Issue 2 will need to transfer to an alternative maintenance schedule/maintenance programme approved by the CAA.

5.5 Application for CAA approval of a commercial air transport maintenance programme should be made to CAA Applications and Certification Section on Form AD981A (JAR-OPS) or AD981B (CAP 360). Application for CAA approval of a non-commercial air transport maintenance schedule should be made to the supervising CAA Regional Office.

6 CANCELLATION

This Notice cancels Airworthiness Notice No. 63, Issue 1, dated 18 March 1999, which should be destroyed.
Minimum Space For Seated Passengers

1 APPLICABILITY  This Airworthiness Notice is applicable to all UK registered aeroplanes over 5700 kg MTWA, certificated in the Transport Category (Passenger) and configured to carry 20 or more passengers.

2 INTRODUCTION

2.1 The CAA is required to approve the cabin interior layout of each aircraft on the UK register. As part of that approval each seat type shall be approved as required by JAR 25.785 or BCAR Section D, Chapter D4-4 paragraph 2.1.2. The approval procedure for such controlled items is defined in BCAR Sections A or B, Chapter A4-8 or B4-8, and JAR-21 Subparts E and K.

2.2 At the initial evaluation of a seat an assessment of the limiting conditions of use is made and, when agreed with the seat manufacturer, these are specified on the GA drawing, on the Declaration of Design and Performance (DDP) or specifically highlighted in a letter of approval. Included in these limitations is a minimum seat pitch at which approval for installation on an aeroplane has been granted. This minimum pitch is defined taking into account head, trunk and leg strike areas of the seat in front, the ability to occupy the seat and, if necessary, quickly vacate the seat and enter the aisle in an emergency.

2.3 The CAA has been asked to reassess the use of seats at a pitch less than has generally been requested in the past, particularly with respect to the more modern, high technology seat designs, and yet still to be satisfied that the various general criteria above are being achieved. Of particular concern is the effect that such lower seat pitches can have on the seat occupancy and the ease of egress from these seats.

2.4 To formalise minimum acceptable seating standards the normal design extremes used for certification purposes for all occupied zones, namely the anthropometric data for the 5th percentile female to the 95th percentile male, have been taken into account. In this regard the critical dimension for the seated occupant is the buttock-knee length. Additionally, affecting the ease with which the occupant can stand up and move from the seat to the main cabin aisle, is the minimum distance and the vertically projected distance between the seat and any seat or fixed structure immediately ahead of the occupant.

2.5 Use of these three dimensions as the criteria for the determination of the acceptability of any seating configuration is considered to provide a realistic minimum standard which can be uniformly adopted whether the seating being considered is placed adjacent to seats of the same or different types, or other typical aeroplane interior structures. These Requirements are not intended to supersede or replace existing occupant protection Criteria prescribed in JAR 25.785 or BCAR D4-4.

3 COMPLIANCE

3.1 With effect from 1 April 1989, all aeroplanes defined in paragraph 1 above and which are being subject to the provision of a new (not previously CAA approved) or amended seating configuration, shall comply with the requirements of this Notice.

3.2 With effect from 1 January 1992 all aeroplanes defined in paragraph 1 above shall comply with the requirements of this Notice.
4 REQUIREMENTS

4.1 The minimum distance between the back support cushion of a seat and the back of the seat or other fixed structure in front, shall be 26 inches. (Figure 1, Dimension A.)

4.2 The minimum distance between a seat and the seat or other fixed structure in front, shall be 7 inches. (Figure 1, Dimension B.)

4.3 The minimum vertically projected distance between seat rows or between a seat and any fixed structure forward of the seat, shall be 3 inches. (Figure 1, Dimension C.)

5 ADDITIONAL INFORMATION

5.1 The measurements required for the demonstration of compliance with the requirement given in paragraph 4.1 above are as follows:

(a) from a datum point in the centre of the seat back at a height of 3 inches above the mean uncompressed seat squab height to the seat or other fixed structure in front made in both vertical and horizontal arcs up to a limiting height of 25 inches above the carpeted floor level, over the full seat place width ‘X’. (See Figure 1.)

(b) from any point on the seat back within the centre one half ‘Y’ of the seat place width at a height of 3 inches above the mean uncompressed seat squab height to the seat or other fixed structure within the central 12 inch region in front made in vertical and horizontal arcs up to a limiting height of 25 inches above the carpeted floor level.

5.2 The full width of the forward edges of the seat squab cushion and the seat arm rests shall be used as the datum points for the measurements of the minimum distance required by paragraph 4.2 above. From these points the measurement of the distance shall be made in both horizontal and vertical unlimited arcs.

5.3 The vertically projected distance required by paragraph 4.3 above shall be measured between the forward edge of the seat squab cushion or the most forward extremity of the armrests and the most aft part of the seat or fixed structure in front.
5.4 Where a magazine rack is provided for the normal stowage of the cabin safety leaflet, sick bag and in-flight reading material provided by the operator, such normally provided material shall be in place during the measurements. Similarly, any fold down or other type of meal table attached to either seat or fixed structure should be in its normal stowed (take-off and landing) position for all measurements.

5.5 All measurements shall be made with the seats in the upright (take-off and landing) position, and the armrests shall be down.

5.6 No alleviation to these requirements will be granted on the basis of deformable soft furnishings.

5.7 All modifications to seats, their installation or any modification to adjacent fixed structures, necessary to achieve compliance with the requirements of this Notice shall be the subject of the appropriate BCAR Section A or Section B major modification procedure, Chapters A2-5/B2-5 or JAR-21 Subpart E procedures.

6 CANCELLATION This Notice cancels Airworthiness Notice No. 64 Issue 1, dated 16 March 1989, which should be destroyed.
CAA Use Of Confidential Information

1 INTRODUCTION

1.1 The Air Navigation Order places a duty on the CAA to consider:-(a) the design, construction, workmanship and materials of aircraft and their associated equipment, and (b) the results of flying trials and such other tests as are necessary when it is satisfying itself that aircraft registered in the UK are fit to fly. In carrying out this duty the CAA, as it is empowered to do, makes extensive use of reports furnished to it by appropriately qualified persons.

1.2 Such reports may come in various forms and have a range of purposes. They may provide a physical description of anything from a complete aeroplane to a small item of equipment. They may specify performance or present test results. They may demonstrate that certain design or manufacturing standards are met.

2 CAA’S USE OF SUCH INFORMATION

2.1 However it is presented, the CAA’s interest in such information stems from its need to be satisfied that a given aircraft or aircraft type is fit to fly. Once satisfied, if the CAA is subsequently presented with another aircraft (or item of equipment or operating proposal etc.) which it knows to be identical in nature it cannot and should not ignore this state of knowledge and insist that the person seeking approval goes through the whole process of satisfying the CAA again.

2.2 The CAA is aware that there may be commercial implications to the policy described in paragraph 2.1, in that second or subsequent applications for a given approval may derive substantial benefit from the evidence provided when the first application was cleared. Technical data are frequently submitted with notes purporting to place restrictions on their use and it is possible that undue significance may be attached to such notes. One purpose of this Airworthiness Notice is, therefore, to make it clear that when an aircraft or item of equipment has once been shown fit for a particular purpose, the fact has been established: the CAA does not need to demand repetitive evidence from a later applicant for an identical certification and will not ask for it. The onus is, of course, upon such an applicant to demonstrate that the relevant circumstances are identical.

2.3 If safety depends on the way in which an aircraft (or item of equipment etc.) is used, the CAA may have considered and approved certain proposed operating limitations, or it may have required evidence that established operating procedures are acceptable; if so, it may require similar material to be provided by subsequent operators seeking a similar clearance. This is, however, a separate matter.

3 CONFIDENTIALITY OF PROPRIETARY INFORMATION

3.1 It is no contradiction of the principles in paragraph 2, to state that subject to the specific provisions in the Civil Aviation Act, the CAA totally accepts prohibitions placed by the owners of information on its disclosures to third parties. Thus, if an aircraft requires modification in order to satisfy a design requirement, no details of a proprietary
modification would be passed on by the CAA to a third party without the express permission of its owners. Nor, if an operation depended upon certain proprietary Flight Manual limitations or data, would such information be passed on.

3.2 Having stated this, if the CAA were presented with details of a modification (or Flight Manual amendment etc.) which was identified as being identical to one which from prior experience it knew would satisfy an airworthiness requirement, such a modification would have to be considered acceptable. Where this involves a light aircraft type of which there exist or are likely to be numerous operators, the CAA may, for efficiency, issue a CAA Supplement to the Flight Manual or Pilot’s Operating Handbook, based on data or information supplied by a manufacturer or an Applicant. As with the situation described in paragraph 2, the CAA can have no justification for requiring further evidence once it has been established that its requirements can be satisfied in a particular way. The onus is, of course, still upon such an applicant to demonstrate that the relevant circumstances are identical.

4 EVIDENCE OF IDENTICALITY

4.1 To establish that a component, item of equipment, complete aircraft, or operating condition is identical to one already approved may not be a simple matter. Design criteria, manufacturing processes, quality control, systems safety assessments, flying qualities and performance, etc., may all be involved and have to be considered.

4.2 In view of this, the CAA will invariably require applicants who request certification on the basis of identicality to provide evidence that this claim is supported by the original applicant (manufacturer, operator, etc.) against whose certification comparison is being made. In the absence of such confirmation, the CAA will normally require substantiating data to be developed and presented to justify certification in its own right.
Aircraft Insurance

1. Attention is drawn to the fact that when the CAA Safety Regulation Group’s Test Pilots fly aircraft for any test purposes neither the CAA nor the Test Pilots accept responsibility for any damage to the aircraft or to third parties or to any person or property whatsoever.

2. All owners are, therefore, required to ensure that insurance policies covering damage to their aircraft and to third parties are suitably endorsed to cover flights by the CAA Safety Regulation Group’s Test Pilots.

   **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.

3. **CANCELLATION**

   This Notice cancels Airworthiness Notice No. 66, Issue 2, dated 18 October 1972, which should be destroyed.
Portable Oxygen Equipment Pressure Relief

1 APPLICABILITY This Airworthiness Notice is applicable to all portable oxygen equipment carried in UK registered aeroplanes certificated in the Transport Category (Passenger) exceeding 5700 kg MTWA and to all aeroplanes manufactured after 1 July 1990 exceeding 5700 kg MTWA, in all certification Categories.

2 INTRODUCTION

2.1 In a recent cabin fire-related accident, there were at least two instances of portable oxygen equipment exploding and forming hazardous projectiles within the cabin as a result of direct involvement in the fire. The CAA is concerned about any possible risk to the aeroplane occupants or rescue personnel from such hazards.

2.2 The explosive failure of an oxygen cylinder in a fire may be caused by high internal pressure generated by the heating of the oxygen, combined with a weakening of the cylinder material. The incorporation of an overtemperature/overpressure relief device should reduce the probability of such a dangerous explosion.

2.3 Although protection against rupture is required on the fixed and portable oxygen equipment in all newly designed aeroplanes in accordance with JAR 25.1453 and associated ACJ 25.1453, it was not a requirement in the 1950’s and 1960’s when many of the currently used portable oxygen equipment were first approved.

2.4 The purpose of this Notice is to publish a requirement for the provision of an overtemperature/overpressure relief device on portable oxygen equipment.

3 COMPLIANCE

With effect from 1 July 1990, all portable oxygen equipment carried in aeroplanes defined in paragraph 1 above, shall comply with the requirement of this Notice.

4 REQUIREMENT

Portable oxygen equipment shall be equipped with an overtemperature/overpressure relief device in accordance with the requirements of JAR 25.1453(b) (1) and associated ACJ 25.1453.

5 ADDITIONAL INFORMATION

Compliance with this requirement would normally be achieved by the provision of a dedicated overtemperature/overpressure relief device. However, such a device may not be necessary if it can be demonstrated by appropriate fire test evidence that the failure of a part of the equipment (e.g. contents gauge) performs a similar function and satisfies the requirement of this Notice.
ATC Transponders And Traffic Alert And Collision Avoidance Systems (TCAS) Ground Testing

1 INTRODUCTION This Notice is to provide general guidance material to aircraft maintenance organisations and maintenance personnel relating to ATC Transponder and Traffic Alert and Collision Avoidance Systems (TCAS). It includes information on the TCAS system together with precautions to be considered when ground testing ATC Transponders in order to minimise the possibility of causing nuisance advisory warnings on TCAS equipped aircraft.

2 GENERAL A number of aircraft operating within airspace regulated by the United Kingdom are now equipped with TCAS. This equipment provides flight deck crew with an independent back-up to visual search and the ATC system by alerting them to potential collision hazards. In the case of the more sophisticated systems which predominate in number, the equipment provides advice to the flight deck crew on how best to manoeuvre so that adequate separation may be maintained or achieved between potentially conflicting aircraft.

3 SYSTEM DESCRIPTION AND OPERATION – TCAS II

3.1 TCAS comprises a dedicated computer unit with associated aerials. Visual and voice advisories are provided for the flight deck crew.

3.2 The TCAS computer requires the presence of a mode S transponder which provides a data link between TCAS equipped aircraft. Sensor inputs to TCAS include radio height and pressure altitude.

3.3 TCAS can provide two distinct forms of advisory information to the flight deck crew, Traffic Advisory (TA), and Resolution Advisory (RA).

(a) Traffic Advisory (TA), is aural and visual information provided in the cockpit to advise the flight deck crew as to the position of a potential threat aircraft.

(b) Resolution Advisory (RA), is aural and visual information provided in the cockpit to advise the flight deck crew that a particular manoeuvre should, or should not, be performed to maintain safe separation from a threat aircraft.

NOTE: Resolution Advisories can not be produced if a potential threat aircraft does not provide altitude information.

3.4 TCAS equipped aircraft operate by interrogating the mode S or mode A/C transponders in proximate aircraft. The replies from mode S and mode C transponders are tracked in range, bearing and altitude. This data is passed on to the system logic for TA and RA processing and display.

3.5 Mode A/C transponders which are not equipped with an altitude encoder or when the altitude reporting is switched off, reply with no data in the altitude field, therefore, the TCAS will track in range and bearing only. This information is passed to the collision avoidance logic for TA detection and display.
4 TESTING CONSIDERATIONS

4.1 Recognising that airborne TCAS aircraft operate by interrogating operational transponders, it is apparent that they will elicit replies from transponder equipped aircraft on the ground if they are in range and the equipment switched on.

4.2 This, therefore, presents the possibility that a ground operated transponder may trigger a nuisance advisory on a TCAS equipped aircraft operating in the close vicinity. If the ground target is providing altitude data the TCAS logic should declare the aircraft to be on the ground and ought not to generate an advisory.

If no altitude data is provided the TCAS will generate a TA if the threat criteria are met. If the ground is providing altitude data other than surface altitude, as may happen with a defective altitude encoder, or if a test pressure is being applied to the altitude encoder, the TCAS may generate both a TA and a RA if the threat criteria are met.

4.3 Maintenance organisations and personnel who are involved in the ground testing of transponders and TCAS equipment are requested to establish procedures and take precautions to ensure that the risks of causing nuisance advisories are recognised and kept to a minimum.

4.4 It is considered that nuisance advisories may be caused to any TCAS equipped aircraft flying in the vicinity of transponders which are being tested, this may also include aircraft passing overhead at medium altitudes. The problem may be more noticeable where ground testing of transponders takes place at airfields located beneath Terminal Control Areas or in the vicinity of Control Areas and Zones where air traffic movements are likely to be numerous.

4.5 The following advice is provided to minimise the possibility of causing nuisance advisories to TCAS equipped aircraft when ground testing transponders and/or TCAS:

(a) When not required ensure that transponders are selected to ‘OFF’ or ‘Standby’.
(b) For transponders under test, when equipped for altitude reporting, set the control unit to ‘Mode A/C’ and select Altitude Reporting ‘ON’.
(c) Where possible, carry out testing inside a hangar to take advantage of any shielding properties it may provide.
(d) Always use the antenna transmission absorption covers when these are provided with the test set.
(e) When testing mode C operation which require the altitude to be increased, radiate directly into the ramp test set via the prescribed attenuator.
(f) In between test parameters, select the transponder to the standby mode.
(g) The simulation of TCAS operation by the radiation from an antenna located on, or remotely based from a workshop, is not permitted.

NOTE: (1) The FAA have advised their staff of operational problems resulting in nuisance advisories caused by ground based transponders installed on hangars for the purpose of testing TCAS installations. Maintenance organisations are reminded that all UK aeronautical radio stations are required to be licensed by the Department of Trade and Industry and the CAA.

NOTE: (2) Air Traffic Control Units may be advised when testing is to be carried out if it is considered that there is a possibility of nuisance advisories being caused by the activity due to its proximity to operational runways.
CAA Approval Of Test Houses Holding UKAS Accreditation

1 INTRODUCTION

The CAA is satisfied that the accreditation standards achieved by the United Kingdom Accreditation Services (UKAS) are equivalent to those required by British Civil Airworthiness Requirements (BCAR) Section A, Chapter A8-6. The CAA will, therefore, grant approval to applicants for Test House Approval to holders of UKAS accreditation, without a separate investigation, subject to the conditions shown in paragraph 3 below.

2 APPLICATION

2.1 Application for approval should be made on Form AD 457, which may be obtained from the CAA, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex RH6 0YR, completed and returned to the same address, enclosing a copy of the UKAS Accreditation Schedule. A substantial reduction in the fee normally required will be permitted.

2.2 The Approval, when granted, will refer to the UKAS accreditation and will be revoked if the UKAS accreditation ceases.

2.3 Organisations holding CAA Group B4 approval in conjunction with other approvals may apply for amendment of their terms of approval to reflect UKAS accreditation and take advantage of other provisions of this Notice; however, no reduction in fee will apply.

3 CONDITIONS

3.1 When an application has been received, the CAA will communicate with the applicant to obtain a statement signed by the Chief Executive to the effect that the management of the Organisation will be conducted with due regard to the needs of airworthiness and to grant access to the CAA to surveillance and assessment reports prepared by UKAS during the course of the accreditation.

3.2 Test reports furnished to customers in response to order calling for CAA release must bear the statement:-

"Issued under the authority of CAA Approval Reference AI/ / " and no separate CAA approved Certificate will be required.

3.3 Test Houses seeking CAA approval where the desired terms of approval include non-destructive testing (NDT) must also satisfy the requirements of Airworthiness Notice No. 94.

3.4 A copy of the Organisation’s ‘Control Manual’, required under UKAS accreditation, must also be lodged with the CAA and maintained up to date by the applicant.

3.5 The sub-contracting of Tests to other than CAA Approved Test Houses is not acceptable for CAA release purposes.

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. Normally such access will
only be required in respect of paragraph 4.4 and, from time to time, in conjunction with UKAS reassessment or surveillance visits.

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 The Organisation shall consult the CAA if in any difficulty about the interpretation of the requirements or associated procedures.

4.4 The CAA shall have the right to witness tests in any way associated with establishing airworthiness.

4.5 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.

5 GENERAL It is emphasised that UKAS accreditation is not in itself a substitute for CAA Approval but may be utilised as an alternative route to gaining such approval, without separate investigation and supervision by the CAA.

6 CANCELLATION This Notice cancels Airworthiness Notice No. 69, Issue 1, dated 6 November 1987, which should be destroyed.
Tyre Bursts In Flight – Inflation Media

1 APPLICABILITY

1.1 This Airworthiness Notice is applicable to all UK registered aeroplanes with a Maximum Take-off Weight Authorised (MTWA) exceeding 5700 kg, with retractable landing gear.

NOTE: For American registered aeroplanes the FAA have published Airworthiness Directive 87-08-09, which requires that not more than 5% Oxygen by volume is contained in tyres inflated and mounted on braked wheels of particular aeroplane types.

2 INTRODUCTION

2.1 JAR 25.729(f), BCAR Chapter D4-5 paragraph 1.2 and TSS Standard 5-6 paragraph 9, require equipment to be protected from the effects of tyre burst. In addition the CAA requires the operational hazards due to tyre bursting in flight be minimised.

2.2 The majority of in-flight tyre bursts have been attributed to the tyre carcass being weakened by foreign object damage, scuffing, etc., such that a rapid release of pressure takes place. Such failures are usually experienced when the gear has been retracted for some time and the effects of brake heat transfer, internal tyre temperature and differential pressure are combined.

2.3 A fatal accident involving cabin decompression and fire has highlighted another mode of tyre failure in flight where a tyre may fail explosively without any significant prior degradation. A tyre inflated with air and subjected to excessive heating, possibly caused by a dragging brake, can experience a chemical reaction resulting in release of volatile gases. Such a chemical reaction in the presence of the oxygen in the contained air may result in a tyre explosion in a landing gear bay and/or an in-flight fire since it appears that the protection normally afforded by conventional pressure relief devices in the wheel would be incapable of responding adequately to the rapid increases in temperature and gas pressure associated with auto-ignition.

2.4 Laboratory material and tyre burst testing indicates that the risk of auto-ignition can be reduced by using an inert gas for tyre inflation and servicing.

2.5 Other potential benefits may accrue from the use of Nitrogen as it will tend to reduce wheel corrosion, tyre fatigue and the risk of fire when fusible plugs melt due to brake overheating.

3 COMPLIANCE

3.1 With effect from 1 April 1988, all braked wheels of retractable landing gear units on aeroplanes defined in paragraph 1 will be required to have tyres inflated with Nitrogen, or other suitable inert gas, and maintained such as to limit the Oxygen content of the compressed gases to not greater than 5% by volume.

3.2 To ensure compliance with this requirement suitable inflation and servicing procedures must be adopted in consultation with the airframe constructor. At airfields where suitable inert gases are not normally available it is acceptable to use air for inflation or servicing provided that a suitable entry is made in the Technical Log and that the tyre is re-inflated or serviced in accordance with the agreed procedure at the earliest opportunity or within 25 flight hours, whichever is the sooner.
4 ADDITIONAL INFORMATION

4.1 In addition to compliance with the requirement of paragraph 3 above, tyre and wheel assemblies should be maintained such that greases, solvents, powders and rubber dust are excluded as far as practicable from within the inflation volume.

5 CANCELLATION This Notice cancels Airworthiness Notice No. 70, Issue 1, dated 16 March 1988, which should be destroyed.
Maintenance Error Management Systems

1 INTRODUCTION

1.1 Given the worldwide commitment to reducing the fatal accident rate, the CAA has, as one of its Human Factors initiatives, undertaken to reduce the number of maintenance errors and to mitigate the consequences of those which remain. CAA seeks to provide an environment in which such errors may be openly investigated in order that the contributing factors and root causes of maintenance errors can be addressed using a system that would complement, not supplant, the two current systems for reporting maintenance errors (MORS and CHIRP).

1.2 The already well established Mandatory Occurrence Reporting (MOR) scheme exists in order that significant safety issues are brought to the notice of the CAA. However, the MORs scheme is not intended to collect and monitor the normal flow of day-to-day defects/incidents etc. which, in remaining an industry responsibility (CAP 382, para 5.4.5), forms an important part of the overall operational safety task. This Notice concerns, primarily, those events which fall below the MOR criteria but which, nevertheless, are important for an organisation to understand and control. However, the principles described in this Notice may also be applied by an organisation to their own internal investigation of incidents meeting the MOR criteria (Note: organisations will still be required to report MORs to the CAA).

1.3 The Confidential Human Factors Incident Reporting Programme (CHIRP) scheme provides an alternate reporting mechanism for individuals who want to report safety concerns and incidents confidentially. However CHIRP should not be considered as an alternative to implementing a MEMS scheme. A MEMS and CHIRP perform different functions albeit acting towards the same ultimate aim, i.e. improved flight safety.

1.4 Maintenance errors with serious consequences such as accidents or incidents are routinely investigated by organisations, CAA or Air Accident Investigation Branch. Operationally significant events (e.g. technical delays, cancellations, in-flight shut-downs etc.) which are not legally required to be reported externally are frequently investigated by organisations but too often only to apportion responsibility for the event. Below these levels are events without operational significance which may rarely be investigated (e.g. the omission of an oil filler cap which, by chance, is noticed and corrected before flight). In order to gain a better understanding of the problems and factors which contribute to errors it is necessary to investigate these and operationally significant events before they possibly contribute to or cause an incident or accident in the future.

1.5 It is important to examine not just what happened, but why it happened, in order to determine the root causes and problems.

2 MAINTENANCE ERROR MANAGEMENT SYSTEM

2.1 With the issue of this Notice, the CAA is declaring its policy on Maintenance Error Management Systems (henceforth referred to as MEMS) such that maintenance organisations, in particular those maintaining large commercial air transport aircraft, are encouraged to adopt the concept.
2.2 Prevailing industry best practice has shown that a MEMS should contain the following elements:
- Clearly identified aims and objectives
- Demonstrable corporate commitment with responsibilities for the MEMS clearly defined
- Corporate encouragement of uninhibited reporting and participation by individuals
- Disciplinary policies and boundaries identified and published
- An event investigation process
- The events that will trigger error investigations identified and published
- Investigators selected and trained
- MEMS education for staff, and training where necessary
- Appropriate action based on investigation findings
- Feedback of results to workforce
- Analysis of the collective data showing contributing factor trends and frequencies

2.3 The aim of the scheme is to identify the factors contributing to incidents, and to make the system resistant to similar errors. Whilst not essential to the success of a MEMS, it is recommended that for large organisations a computerised database be used for storage and analysis of MEMS data. This would enable the full potential of such a system to be utilised in managing errors.

2.4 For the purpose of this Airworthiness Notice a maintenance error is considered to have occurred when the maintenance system, including the human element, fails to perform in the manner expected in order to achieve its safety objectives. The human element includes technicians, engineers, planners, managers, store-keepers – in fact any person contributing to the maintenance process. The foregoing definition differs from that of a human error as it demands consideration of the system failings (e.g. inadequate staffing, organisational factors, tooling availability, ambiguous manuals etc.) as well as the error committed by a person.

3 CAA ASSURANCES

3.1 It is recognised that the success of a MEM programme is dependent on full and free investigation without fear of action by the CAA. Accordingly, the CAA gives the following assurances:

3.1.1 The CAA will not approve a MEMS even when included in the approved Exposition. Should a MEMS be included in an Exposition, it will not be subject to auditing as part of CAA regulatory oversight of that organisation. Any interest shown in an organisation's MEMS is purely one of a desire to work with industry to enhance safety.

3.1.2 The CAA will not require any organisation or individual to make available to the Authority any specific reports that are submitted under a MEMS, other than information normally reported to the Authority via the MOR scheme.

3.1.3 If an Organisation, in the interests of improving safety, voluntarily elects to share with the CAA the details of a specific occurrence reported under MEMS, or the results of its investigation, the CAA will:-

(a) not disclose the name of the person submitting the MEMS report, nor of a person to whom it relates, nor pass on a MEMS report to a third party, unless required to do so by law or unless the person(s) concerned authorises such disclosure.

(b) take all reasonable steps possible to avoid disclosing the identity of the reporter or of those individuals involved in the occurrence, should any follow-up action arising from a MEMS report be taken.

(c) not, as its policy, institute proceedings in respect of unpremeditated or inadvertent breaches of the law or requirements which come to its attention only because they have been reported under the MEMS scheme, except in cases involving dereliction
of duty amounting to gross negligence or recklessness. Such an assurance is similar to that provided under the MOR scheme.

4 MEMS CODE OF PRACTICE

4.1 The CAA encourages organisations to adopt the following code of practice regarding a MEMS:-

4.1.1 Where an occurrence reported via MEMS indicates an unpremeditated or inadvertent lapse by an employee, as described below, the CAA would expect the employer to act reasonably, agreeing that free and full reporting is the primary aim in order to establish why the event happened by studying the contributory factors that led to the incident, and that every effort should be made to avoid action that may inhibit reporting.

4.1.2 In the context of error management it is considered that an unpremeditated or inadvertent lapse should not incur any punitive action, but a breach of professionalism may do so. As a guideline, individuals should not attract punitive action unless:

(a) the act was intended to cause deliberate harm or damage.
(b) the person concerned does not have a constructive attitude towards complying with safe operating procedures.
(c) the person concerned knowingly violated procedures that were readily available, workable, intelligible and correct.
(d) the person concerned has been involved previously in similar lapses.
(e) the person concerned has attempted to hide their lapse or part in a mishap.
(f) the act was the result of a substantial disregard for safety.

“Substantial disregard”, for this purpose, means:-

- In the case of a certification authorisation holder (e.g. licensed engineer or Certifying Staff) the act or failure to act was a substantial deviation from the degree of care, judgement and responsibility reasonably expected of such a person.
- In the case of a person holding no maintenance certification responsibility, the act or failure to act was a substantial deviation from the degree of care and diligence expected of a reasonable person in those circumstances.

The degree of culpability would vary depending on any mitigating circumstances that are identified as a result of the MEMS investigation. It follows that any action taken by the organisation would also be on a sliding scale varying from corrective measures such as retraining through to dismissal of the individual.

4.1.3 In the case of incidents investigated via a MEMS, irrespective of whether or not such incidents were brought to the knowledge of the CAA, the CAA expects an organisation to address the problems which contributed to these incidents. The organisation should, where possible, implement appropriate measures to prevent the problem from re-occurring, or alternatively monitor future occurrences, according to the degree of risk and likelihood of re-occurrence. A supporting database is useful in these circumstances in helping to assess the frequency of occurrence and any associated trends.

4.1.4 The CAA would expect that identified safety issues would be acted upon. If the CAA becomes aware, by whatever means, that a significant safety problem existed and was not addressed, it reserves the right to take appropriate action.

NOTE: The statement by an organisation that an incident is undergoing, or has undergone, a MEMS investigation, without any additional information provided to explain why the incident occurred, would not normally be an adequate basis for an MOR closure.

4.1.5 Organisations are encouraged to share their MEMS results with the CAA and with other maintenance organisations. It is hoped that by sharing such data the CAA and industry can jointly develop a better understanding of maintenance error causation and develop more focused human factors strategies. However, it is appreciated that some information in a MEMS may be considered sensitive to the organisation affected, and may need to be de-identified before being shared with other organisations.
5 FURTHER INFORMATION

5.1 The CAA is in the process of producing further guidance material which will assist organisations which wish to implement a MEMS. This will be made available later this year.

5.2 Maintenance Organisations requiring further information or advice on how to establish a Maintenance Error Management System should, in the first instance, contact their CAA Aircraft Maintenance Standards Department (AMSD) local Regional Office; or:

Maintenance Requirements and Policy Section,
Aircraft Maintenance Standards Department,
CAA
Aviation House
Gatwick Airport South
West Sussex
RH6 0YR
Tel: 01293 573363
Fax: 01293 573987
Safety Critical Maintenance Tasks

1 A factor in a serious incident involving an oil leakage on a large twin engined commercial air transport aircraft was the failure to re-install the drive cover plate on both engines following maintenance. The CAA wishes to highlight the potential safety benefit where companies choose to apply aspects of Extended Range Twin Operations (ETOPS) maintenance philosophy to multi-system aircraft in order to avoid the possibility of simultaneous incorrect maintenance on two or more safety critical systems. In this context, such systems are those which have a fundamental influence upon the safe operation of the aircraft, engines and their systems being a case in point.

2 Operators and maintenance organisations should consider the following paragraphs when planning, and accomplishing scheduled and non-scheduled maintenance tasks on multi-system aircraft.

(a) Arrangements should be made to stagger scheduled maintenance tasks on essential or primary systems such that the accomplishment of similar critical tasks on two or more systems are segregated. Consideration should be given to introducing procedures that will ensure that such tasks are separated by at least one flight cycle. Where it is not practical to introduce staggered maintenance, inspections and functional checks should be performed independently to ensure system serviceability.

(b) Where it is not practical to introduce staggered maintenance at Base Maintenance inputs or during rectification of Line or Base defects, the use of separate work teams together with the accomplishment of appropriate functional checks to verify system serviceability should ensure a similar level of system integrity.

(c) Procedures should be established to provide maintenance and planning personnel with guidance on the identification and accomplishment of safety critical tasks conducted during scheduled and non-scheduled maintenance activities. Routine task documentation should identify those tasks which may have a critical effect on safety and should clearly identify the individual stages of such tasks. Maintenance Programme or Maintenance Schedule basic rules should provide the necessary standards to ensure the identification of critical scheduled maintenance tasks.

3 Maintenance personnel’s initial and continuation training should highlight the critical nature of conducting maintenance tasks on essential or primary systems. The instruction given should provide personnel with the necessary information to identify and satisfactorily accomplish such tasks. Training programmes should focus on safety critical tasks and the possible consequences of failure to follow the associated maintenance procedures. The development of these training programmes should use feedback from maintenance experience, to enhance the programme and maintenance procedures.

4 The CAA considers that the intent of this Airworthiness Notice No. 72 provides a basis for organisations to adopt good maintenance practices for multi-system aircraft.
Corrosion Of Aircraft Structures

1. Recent aircraft experiences have reaffirmed the problems that corrosion can pose to the airworthiness of transport aircraft. The more vulnerable aircraft are those which are ‘high time’ (age beyond half their original design life aim) when corrosion in conjunction with fatigue can pose serious airworthiness hazards. However, corrosion can also develop soon after an aircraft has entered service with similar consequences.

2. Deterioration in material thickness of more than 50% and cracking of airframes induced by corrosion have been found shortly after aircraft have been declared airworthy following a major check in accordance with the maintenance schedule.

3. Non-destructive inspection (NDI) techniques have developed significantly over the last decade so that corrosion not readily detectable visually, such as within joints and between faying surfaces, can be detected by eddy current, ultrasonic and mechanical impedance techniques, as appropriate. Development of NDI techniques is a continuing activity and the advice of the aircraft manufacturer should be sought for information on the most effective techniques to be used.

4. Aluminium alloys in particular are susceptible to intergranular corrosion (i.e. corrode along the grain boundaries within the metal), thus the removal of superficial products of corrosion followed by reprotexion is generally not an effective method of preventing further corrosion. Repair or replacement of the component may be required. All repairs necessitated by corrosive attack, of whatever nature, must be made to an approved repair scheme in accordance with the manufacturer’s recommendations. Further information on corrosion is contained in CAP 562 ‘Civil Aircraft Airworthiness Information and Procedures’ Leaflet 6-2.

5. Manufacturers’ maintenance documentation is being updated to include corrosion control and prevention programmes, which give details of the areas most likely to suffer corrosion and the required maintenance actions. Poorly drained areas, the faying surfaces of joints, fuselage bilges, and structures concealed by sound proofing or hidden below freight bay floors, are typical of the areas liable to corrosive attack requiring particular attention.

6. The use of organic water-displacing and corrosion inhibiting compounds is advocated in corrosion control programmes. Normally the compounds approved for use and the areas of application are stated by the aircraft manufacturer. Operators or maintenance organisations applying other compounds have the responsibility to justify technically, to the CAA, the fitness for purpose of those they use. Furthermore, adequate procedures should be in place to ensure that the material procured by the operator or maintenance organisation consistently meets its specification. (See CAAIP Leaflet 11-22, Appendix 51-3).

7. The use of corrosion inhibitors does not negate the requirement for a comprehensive inspection as part of a corrosion control programme. Such programmes have mandatory status, see Airworthiness Notice No. 89.
Operators and maintenance engineers are reminded of the continual need for vigilance to detect the onset of corrosion, particularly where ageing aircraft are concerned. Confirmed evidence of significant corrosion should be reported at once to the manufacturer and to the CAA.

**Cancellation** This Notice cancels Airworthiness Notice No 73 Issue 2, dated 25 October 1991, which should be destroyed.
Airworthiness Concessions In Respect Of Foreign Built Aircraft

1 INTRODUCTION From time to time UK operators find it necessary to apply to the CAA for concessions to cover the non-compliance of certain foreign built aircraft with the applicable Additional Requirements (formerly called Special Conditions) for certification on the UK Register. Some typical cases include:-

(a) Aircraft being purchased and placed on the UK Register at short notice.
(b) Aircraft being dry leased (see Note 1) on a relatively long term basis (e.g. 12 months or more), but required in service before all necessary modifications can be embodied.
(c) Aircraft being dry leased on a short term basis (e.g. 6 months), for which the lead time on parts procurement may render compliance difficult.

NOTE: (1) By ‘dry leased’ is meant aircraft under operational control of a UK operator (i.e. subject to a direction under Article 102 of the ANO). All such aircraft are required to meet UK Certification requirements.

NOTE: (2) Aircraft on ‘wet lease’, i.e. under the control of the lessor operator, are considered the responsibility of the State in which they are registered and by whom they are operated.

This Notice summarises the design criteria which will normally be applied by the CAA in determining whether or not, in a particular case, a concession should be granted.

2 AEROPLANES WITH A PROVEN AND SATISFACTORY RECORD

2.1 Definition Aeroplanes which, according to their class, satisfy the criteria in Appendix 1 are considered to have a proven and satisfactory record.

2.2 Policy on Concessions The aeroplane must normally be of a kind Type Certificated in the UK and in principle compliance with all UK Standards (including Airworthiness Notices) is required. However, subject to the criteria set out in Appendix 2 of this Notice, the CAA will give consideration to granting concessions against compliance with individual requirements. Having regard to the record of the type, it will normally be possible to consider granting concessions for up to 6 months and, for large aeroplanes with more than 50 million hours of satisfactory service experience, this period may be increased to 12 months.

3 AEROPLANES OTHER THAN WELL PROVEN TYPES AND HELICOPTERS

3.1 Definition Aeroplanes other than those meeting the criteria of Appendix 1, and helicopters.

3.2 Policy on Concessions The aircraft must normally be of a kind Type Certificated in the UK and in principle, compliance with all UK Standards (including Airworthiness Notices) is required. Requests for concessions will be expected to be clearly justified in the light of the considerations in Appendix 2. Where concessions are granted they will be of limited duration and will not, under normal circumstances, exceed 6 months in duration.

4 LEASED AIRCRAFT Application of the above principles to the particular case of foreign registered leased aeroplanes was the subject of CAA Airworthiness Information Leaflet AIL/0162, promulgated to UK AOC holders in 1987. The intent of this Airworthiness Notice
is to widen the distribution of this policy, and to indicate that it applies equally to aeroplanes and helicopters being added to the UK Register (paragraph 1(a) refers).

5 CANCELLATION This Notice cancels Airworthiness Notice No. 74, Issue 4, dated 5 November 1993, which should be destroyed.
**Aeroplanes Considered to have a Proven and Satisfactory Record**

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<th>MTWA kg</th>
<th>Minimum Service Experience – Hours</th>
<th>Average Fatal Accident Rate</th>
<th>Examples</th>
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<td>2 million</td>
<td>Appreciably less than 10 per million hours</td>
<td>Beech 90, 99</td>
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Criteria Applied by CAA When Considering Concessions Against UK Certification Requirements

1 Applicants for concessions will be required to show that efforts have been made to anticipate the demand for additional capacity and that all practicable steps have been taken to comply with the UK certification standards.

2 A significant proportion of the UK fleet of one type of aircraft must not be the subject of concessions at one time. Usually, therefore, concessions will be limited to two aircraft of any given operator’s fleet at any one time.

3 Subject to (1) and (2), concessions will be considered for up to six months on any one aircraft, and this period may be extended to 12 months where service experience exceeds 50 million hours.

4 In considering whether a concession should be granted, account will be taken of the accident record with respect to the Additional Requirement or other requirement in question.

5 Concessions affecting operational matters will be considered particularly carefully. This will include items concerning:
   (a) Flight Manual/ performance
       – to comply with UK standards in important respects.
   (b) Handling, flight deck layout, instrumentation, flight management systems and warnings
       – differences within a fleet to be acceptable may require dedicated crews and relevant training.
Maintenance Requirements For Variable Pitch Propellers Installed On Aircraft Holding a UK Certificate of Airworthiness

1 INTRODUCTION

1.1 For most propeller types the propeller manufacturer will publish overhaul periods and any necessary maintenance inspection instructions which will be applied by the operator at the periods specified unless varied by the Approved Maintenance Schedule.

1.2 It has been recognised though that there are a few propeller types where the manufacturer has not published overhaul lives in terms of hours or calendar period. In order to ensure that these propellers are being maintained in a satisfactory condition, the inspections of this Notice are required to be applied at the periods stated.

1.3 A situation also exists where, for a low utilisation operation, the calendar period can be reached when a propeller has run only a small percentage of its operating hours limit. Under these circumstances, wear would not be expected to be a problem while degradation of seals and corrosion are more likely to exist. This Notice introduces an alternative maintenance policy which, subject to intermediate inspections, as specified in the appendix, will monitor the condition of a propeller such that it can be operated beyond its calendar period to achieve its operating hourly limit.

1.4 Any overriding mandatory requirements in respect of particular propellers issued either by the Airworthiness Authority of the country of manufacture of a propeller, or by the CAA will take precedence over this Notice. For the purposes of compliance with an AD which specifies requirements as a function of overhaul, the bare blade inspection required by paragraph 4.2.2 shall be deemed as an overhaul.

2 APPLICABILITY

2.1 The requirements of this Notice are applicable to variable pitch propellers, variable pitch propellers which have been locked and to ground adjustable propellers.

3 COMPLIANCE

3.1 The maintenance policy defined in either paragraph 3.1(a) or (b) or (c) must be applied to all variable pitch and ground adjustable propellers.

(a) Overhaul at the operating hours or calendar period recommended by the manufacturer, whichever occurs first, unless varied by the Approved Maintenance Schedule.

(b) The hub/blade and bare blade inspections specified in paragraphs 4.2.1 and 4.2.2 of this Notice must be applied when:

(i) No calendar or operating hour overhaul intervals are recommended by the manufacturer, or

(ii) Only operating hour overhaul intervals are recommended by the manufacturer with no associated calendar recommendation.

(c) For a propeller fitted to an aircraft which has a low utilisation, and for which the manufacturer has specified overhaul periods in terms of operating hours and calendar periods, the calendar life limitation only may be exceeded subject to compliance with the hub/blade and bare blade inspections specified in paragraphs 4.2.1 and 4.2.2 of this Notice.
3.2 The periods of operation or elapsed calendar time prescribed in the appendix to this Notice shall be calculated from the date of the initial installation of the propeller on an aircraft following manufacture or complete overhaul of the propeller and may be preceded by a period of storage of up to 2 years which has been carried out in accordance with the manufacturer’s recommendations. Periods of storage in excess of 2 years or subsequent to the initial installation shall be counted as if the propeller were installed.

3.3 The applicability and compliance requirements of this Notice are summarised in the appendix to this Notice, Tables 1 and 2.

4 PROPELLER INSPECTIONS

4.1 The inspection of propellers required by Tables 1 or 2 shall be undertaken by an organisation approved by the CAA for the purpose. However, with the exception of aircraft used for commercial air transport, the inspections required by Table 2 may, subject to prior approval of the local CAA Regional Office, be undertaken by an aircraft maintenance engineer licensed in Category C for the type of engine to which the propeller is fitted.

4.2 The inspections and re-work shall be carried out in accordance with the manufacturer’s instructions and as a minimum shall include:

4.2.1 Hub/blade inspection.
(a) Dismantling of the propeller sufficiently to gain access to the blade root bearing assemblies.
(b) Thorough cleaning of the blade root assemblies.
(c) Examination for pitting, fretting, corrosion, cracking and other damage of the hub, bearings, blade roots, and housing, together with replacement of any disturbed seals. All of the blade surfaces shall be examined for damage, delamination (where applicable), and the presence of corrosion, removing the paint finish as necessary. In cases where de-icer boots or overshoe are installed on the blades, a detailed examination for corrosion around their edges shall be carried out, and, if any evidence is found, the boots/overshoes shall be removed to permit a full inspection of the masked areas. Any corrosion shall be removed and the blades re-protected. In cases where de-icer boots/overshoes are removed, replacement parts shall be installed using the facilities prescribed and under conditions and procedures specified, in the relevant manufacturer’s Overhaul Manual.
(d) Checking the track of the propeller after refitting, then functioning throughout its operational range by means of an engine run to verify correct performance, and to establish that any vibration is within acceptance limits.

4.2.2 Bare blade inspection.
In addition to the hub/blade inspection ref. 4.2.1;
(a) Removal of all de-icing boots or overshoe and fairings.
(b) Removal of all paint and erosion protection.
(c) Removal of all blade root bushings and plugs.
(d) Inspection of the complete blade surface for the presence of corrosion. Any corrosion shall be removed and the blades re-protected and prepared for the re-installation of the blade fittings.
(e) Full dimensional inspection of all blades.

5 RECORD OF ACCOMPLISHMENT

5.1 A comprehensive record of the inspection and work done in accordance with paragraph 4 of this Notice shall be retained and an entry, making a cross reference to this document, shall be inserted in the Propeller Log Book.

6 CANCELLATION

6.1 This Notice cancels Airworthiness Notice No. 75, Issue 9, dated 1 April 1983, which should be destroyed.
Propellers shall be maintained in accordance with either (a) or (b) of the appropriate following Table:

**Table 1 Propellers fitted to Commercial Air Transport, Public Transport, Aerial Work and Private Category Aircraft; MTWA above 5700 kg**

<table>
<thead>
<tr>
<th>Overhaul period</th>
<th>Whichever occurs first of operating hours or calendar period as published by the propeller manufacturer unless varied by the Approved Maintenance Schedule.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>Operating hours as published by the propeller manufacturer or on condition where no life has been published subject to (i) and (ii) below.</td>
</tr>
<tr>
<td>(i) Hub/blade inspection period</td>
<td>Inspect at 3 years since new or overhaul or period inspection (ii) below; repeat at 1 year intervals.</td>
</tr>
<tr>
<td>(ii) Bare blade inspection period</td>
<td>Not to exceed 6 years since new, overhaul or last bare blade inspection.</td>
</tr>
</tbody>
</table>

**Table 2 Propellers fitted to Commercial Air Transport, Public Transport, Aerial Work and Private Category Aircraft; MTWA below 5700 kg**

<table>
<thead>
<tr>
<th>Overhaul period</th>
<th>Whichever occurs first of operating hours or calendar period as published by the propeller manufacturer unless varied by the Approved Maintenance Schedule.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>Operating hours as published by the propeller manufacturer or on condition where no life has been published subject to (i) and (ii) below.</td>
</tr>
<tr>
<td>(i) Hub/blade inspection period</td>
<td>Inspect at 3 years since new or overhaul or inspection (ii) below (but may be phased to next annual check or Certificate of Airworthiness Renewal provided period does not exceed 4 years).</td>
</tr>
<tr>
<td>(ii) Bare blade inspection period</td>
<td>Not to exceed 6 years since new, overhaul or last bare blade inspection.</td>
</tr>
</tbody>
</table>

**NOTE:** Hub/blade inspections and bare blade inspections are to be in accordance with the procedures of paragraph 4 of this Notice.
Electrical Power Supplies For Aircraft Radio Systems

1 INTRODUCTION
1.1 Previous Issues of this Notice drew attention to the dangers of operation of aircraft in which the entire radio installation was supplied via a single electrical feeder circuit, and stated that Certificates of Airworthiness would not be issued or renewed in respect of aircraft certificated in the Transport Category with such systems.
1.2 This Notice is re-issued to take account of the withdrawal of the General Purpose Category Certificate of Airworthiness and, following consultation with industry, to extend applicability of the Notice to include multi-engine aircraft in any Category. Interpretative material has been added to give guidance on the extent of the assessment to be made.
1.3 It is not intended that aircraft, for which compliance with the requirements of paragraph 2 of previous Issues of this Notice has been established, should be re-examined.

2 REQUIREMENT
The electrical feeder arrangements shall be such that:
(a) Where more than one radio system is installed, no likely single failure (e.g. a fuse or a relay) will result in the loss of all radio systems.

NOTE: It is strongly recommended that such a failure should only result in the loss of one radio system.
(b) Where duplicate radio systems, or radio systems which can duplicate a function, are installed, no likely single failure (e.g. a fuse or a relay) will result in the loss of both systems.

3 INTERPRETATION
3.1 In examining electrical feeder arrangements to establish compliance with 2, the examination for likely single failures should include:
(a) The mechanical and electrical aspects of the supply circuit, including the return path of the electrical supply.
(b) The location within the electrical circuit of fuses, circuit breakers and power switching relays, their physical location in the aircraft and the manner in which they are interconnected.
(c) Panels for integrated control of radio systems, audio integration systems, and dimmer control equipment for electronic displays.

4 IMPLEMENTATION
4.1 Single and multi-engined aircraft in the Transport Category (Passenger) and (Cargo) – a Certificate of Airworthiness will not be issued or renewed unless the aircraft complies with the requirements of paragraph 2.
4.2 Multi-engined aircraft in other than the Transport Category – a Certificate of Airworthiness will not be issued or renewed after 1st June 1981 unless the aircraft complies with the requirements of paragraph 2.
4.3 The CAA will consider applications for a waiver to the requirement of this Notice in respect of multi-engined aircraft in other than the Transport Category when it can be satisfied that
the aircraft is fitted with such limited radio equipment, or is restricted to operations under such limited conditions that the loss of the electrical supply to all radio equipment would not significantly affect the safety of the aircraft during its permitted normal operation.

5 RECOMMENDATION
It is strongly recommended that all single-engined aircraft (in addition to those in the Transport Category for which compliance is required) should comply with the requirements of this Notice.

6 CANCELLATION
This Notice cancels Airworthiness Notice No. 76, Issue 3, dated 1st April 1980, which should be destroyed.
Counter/Pointer Type Instruments (Altimeters)

1 The United Kingdom Altimeter Committee in 1965 concluded the best altitude presentation was provided by the counter/pointer type instrument. The CAA is satisfied that subsequent experience has supported this conclusion.

2 In the case of turbo-jet-engined aircraft, in which hazardous misreading of altimeters is more likely to occur, it is desirable to eliminate reliance on the less satisfactory types of presentation. Therefore, subject to the proviso of paragraph 3, all turbo-jet-engined aircraft of over 5700 kg (12 500 lb) all up weight must have as a minimum one of the following:
   (a) One approved counter/pointer type instrument visible to both crew members, in addition to their normally positioned altimeters, or
   (b) One approved counter/pointer type instrument in the Captain’s normal altimeter position, in addition to the existing altimeters at other crew stations.

3 The following exception to paragraph 2 is permissible:
   The CAA, whilst preferring the arrangement described in paragraph 2, will continue to accept drum/pointer altimeters where these are standard equipment on existing aircraft. (For newly designed aircraft drum/pointer altimeters will not be accepted.)

4 This Airworthiness Notice is only applicable to aircraft operators who operate in accordance with the Air Navigation Order (ANO). Those aircraft operators who operate or have elected to comply with JAR-OPS1, must fulfil the requirements of JAR-OPS1.652(c).

5 CANCELLATION This Notice cancels Airworthiness Notice No. 77 Issue 2, dated 29 October 2001, which should be destroyed.
The Mandatory Occurrence Reporting Scheme – Applicability

1 INTRODUCTION Ever since the Mandatory Occurrence Reporting Scheme for public transport aircraft was set up in 1976, there has been a maximum aircraft weight limit of 2300 kg below which reporting was not mandatory, nor has it been required for privately operated aircraft irrespective of weight. These limitations on the gathering of safety data by CAA have obvious disadvantages, for example where a type is operated in both public transport and private flight regimes, and there have been accidents where the investigation and subsequent remedial action have been hindered by the lack of knowledge of relevant incidents. An additional concern is the increasing complexity of some privately operated aircraft types.

2 COMPLIANCE Following consultation with industry, it has been decided to remove the weight limit for mandatory occurrence reporting for public transport aircraft, and to include privately operated turbine engined aircraft. Turbine power was chosen as a parameter as it aligns closely with the degree of complexity of aircraft systems. ‘Public transport aircraft’ means aircraft flying, or intended by the operator of aircraft to fly, for the purpose of public transport (see Air Navigation Order, Article 130).

3 APPLICABILITY The Air Navigation Order 2000 (Article 117) requires occurrence reporting for all public transport aircraft and all (excluding those with Permits to Fly) turbine engined aircraft.
CAP 382 ‘The Mandatory Occurrence Reporting Scheme – Information and Guidance’ is being reissued accordingly. The only aircraft not now subject to mandatory occurrence reporting are therefore piston engined aircraft used for Aerial Work or privately operated, and any aircraft with a Permit to Fly. Voluntary occurrence reporting for such aircraft is of course still encouraged.

4 ADDITIONAL INFORMATION
Any queries should be addressed to:
Safety Investigation and Data Department
Civil Aviation Authority
Safety Regulation Group
Aviation House
Gatwick Airport South
West Sussex
RH6 0YR

5 CANCELLATION This Notice cancels Airworthiness Notice No. 78, Issue 1 dated 30 September 1996, which should be destroyed.
Access To And Opening Of Type III And Type IV Emergency Exits

1 APPLICABILITY

1.1 This Airworthiness Notice is applicable to all UK registered aeroplanes over 5700 kg MTWA, certificated in the Transport Category (Passenger) and configured to carry 20 or more passengers and equipped with Type III emergency exits and/or Type IV emergency exits or their equivalent. Exits considered to be equivalent to Type IV exits are referred to as Type IV exits in this Notice.

1.2 For the purpose of this Notice, exits which are smaller in size than Type III emergency exits (including elliptical exits) shall be deemed to be Type IV emergency exits, even though they are not formally classified as such.

2 INTRODUCTION

2.1 From a review of accidents, where rapid evacuation of the aeroplane was a critical factor governing passenger survival, Issue 1 of this Notice stated that it appeared that mid-cabin Type III emergency exits, although only rated for a relatively small number of passengers, could, in certain circumstances, become a major escape route.

2.2 Following further reviews it has been decided to extend the applicability of this Notice to include Type IV exits (Issue 2) and to specify the requirements for face-to-face seating configurations.

2.3 Current Requirements governing the access to Type III and Type IV emergency exits are contained in BCAR Section D, Chapter D4-3, paragraph 4.2.5(d) and JAR 25.813(c) (1) as applicable but no specific dimensions are quoted for the minimum width of access to such exits between adjacent seat rows. Tests have demonstrated that, in practice with typical economy class seats, seat pitches down to approximately 30 inches have little or no effect on the rate of exit egress. The major constraint on the location of seats relative to such exits is the need to ensure that the seats do not impede the removal and disposal of the exit hatches.

2.4 The CAA believes that Type III and Type IV emergency exits need to be made more effective and is seeking international adoption of radical improvements in access to and ease of opening of such exits. Such new regulations, if adopted, will of necessity be on a relatively long timescale. In the interim, the CAA has established that, whilst only small improvements can be made in exit egress rates, immediate action can be taken that will provide greater space adjacent to the exit and thereby facilitate the more rapid opening of such exits and reduce the time taken for the initiation of passenger egress. Accordingly, this Notice has been issued to ensure effective opening, handling and disposal of the hatch and to define the additional minimum access requirements for Type III and Type IV emergency exits.

2.5 To realise the full potential of improved exit access, it is also essential that passengers seated adjacent to the exits are readily able to determine the correct method of opening and disposal of exits in an emergency. Whilst such information is provided in the Cabin Safety Leaflet, operating instructions, comparable to those contained in such Leaflets, are required by this Notice to be repeated on the backs of all seats on the seat row immediately forward of the exits, except as referred to in paragraph 5.6.
2.6 To encourage a smooth passenger flow through the relatively small Type III and Type IV emergency exits, it is important that passengers are encouraged to approach the exit from the cabin aisle via an access route which is sensibly normal to the exit. Alternative routes such as can be created by climbing over seat backs which have been pushed forward should be discouraged. To achieve, where possible, an orderly approach to the exit from the aisle, the CAA has decided that the seat backs of those seat rows immediately forward and aft of the exit access route from the aisle shall be restricted in both recline and break forward not only to maintain the minimum access width but also to maintain the seat back in an essentially upright attitude.

2.7 Whilst the revised seating arrangements required by this Notice should minimise the likelihood of passengers either kneeling or standing on seats to reach the exit, it is nevertheless considered necessary to ensure that the seat design is such that a person’s foot, say, may not be trapped.

3 COMPLIANCE

3.1 With effect from 1 July 1986 all aeroplanes defined in paragraph 1 above with Type III emergency exits having all forward facing or all aft facing seats adjacent to these exits shall comply with the requirements of this Notice.

3.2 With effect from 1 December 1987 all aeroplanes defined in paragraph 1 above with Type IV emergency exits having all forward facing or all aft facing seats adjacent to these exits shall comply with the requirements of this Notice.

3.3 With effect from 1 April 1989, all aeroplanes defined in paragraph 1 above which are subject to the provision of a new or amended seating configuration, shall comply with the requirements of this Notice. In addition, with effect from 1 May 1989 all aeroplanes defined in paragraph 1 above having face-to-face seats forming the access route to these exits shall comply with the requirements of this Notice.

4 REQUIREMENTS

4.1 To facilitate rapid opening and disposal, each Type III and Type IV emergency exit, in addition to meeting the current requirements of BCAR Section D, Chapter D4-3, paragraph 4.2.5(d) or JAR 25.813(c) (1) as applicable, shall have access space meeting the requirements specified in either paragraph 4.1.1 or 4.1.2 for Type III exits or either paragraph 4.1.3 or 4.1.4 for Type IV exits where conventional seating arrangements are installed, and in addition paragraph 4.1.5 when face-to-face seating is installed.

4.1.1 Where all forward facing or all aft facing seats are arranged such that there is a single access route between seat rows from the aisle to a Type III exit, the access shall be of sufficient width and be located fore and aft so that no part of any seat which is beneath the exit extends beyond the exit centre line and the access width between seat rows vertically projected, shall not be less than half the exit hatch width including any trim, or 10 inches, whichever is the greater (see Figure 1).

NOTE: The outboard arm rest must not protrude across the exit aperture nor impede the removal of the exit hatch.

4.1.2 Seats may only be located beyond the centre line of a Type III exit provided there is a space immediately adjacent to the exit which projects inboard from the exit a distance no less than the width of a passenger seat and the seats are so arranged as to provide two access routes between seat rows from the cabin aisle to the exit.

NOTE: Where more than one access route from the cabin aisle to a Type III exit is provided, the minimum access width referred to in paragraph 4.1.1 need not apply (see paragraph 5.4 of this Notice).
4.1.3 Where all forward facing or all aft facing seats are arranged such that there is a single access route from the aisle to a Type IV emergency exit then the projected exit aperture shall not be obstructed from the exit to the aisle (see Figure 2 and paragraph 5.4 of this Notice).

**NOTE:** (1) Some incursion into the projection area of the emergency exit hatch, including its trim, may be acceptable so long as it can be shown that the incursion does not impair the rapid removal of the exit hatch.

**NOTE:** (2) The outboard arm rest must not protrude across the exit aperture nor impede the removal of the exit hatch.

4.1.4 Seats may only be located in line with a Type IV exit such that the seat back is within the projected exit aperture provided there is a space immediately adjacent to the exit. Such a space shall project inboard from the exit a distance no less than the width of a passenger seat and be so arranged as to provide two access routes between seat rows from the cabin aisle to the exit. (See paragraph 5.4 of this Notice.)

4.1.5 Where face-to-face seating is provided adjacent to the emergency exit, the minimum permitted distance between any parts of the seat rows shall be 16 inches vertically projected and the minimum permitted distance between the plane of the seat backs on either side of the access route shall be 52 inches measured on the mid-lines of each seat place at a height of 3 inches above the seat cushions. (See Figure 3 and paragraph 5.6 of this Notice.)

4.2 Instruction Placards, clearly indicating the method of opening and disposal of each Type III and Type IV emergency exit (additional to existing opening instructions at the exit), shall be located in a prominent position and clearly visible to the occupant of each seat which forms the access route from the cabin aisle to the exit (see paragraphs 5.6 and 5.9 of this Notice).
FIGURE 2 MINIMUM ACCESS REQUIRED BY PARAGRAPH 4.1.3

FIGURE 3 MINIMUM ACCESS REQUIRED BY PARAGRAPH 4.1.5
4.3 The seat back of each seat which forms the boundary of the access route to each Type III and Type IV emergency exit shall be restricted in its movement (break forward and recline, where fitted) so as to maintain the minimum access to the exit required by paragraph 4.1, and ensure that the seat back is in an essentially upright position (i.e. fully forward or fully back, but not exceeding ±35 ° from the vertical), without overlapping the projected opening of the exit.

4.3.1 The seat back shall be capable of maintaining the essentially upright position under loads of up to 300 lbf which should be applied horizontally, in each direction of travel, at the top of the seat back structure at the most adverse position relative to its support structure. The seat back, when under load, should remain upright within ±35 ° of the vertical and any permanent deformation should not significantly impede access to the exit.

4.3.2 Permanent deformation should be kept to a minimum particularly where access dimensions are close to the minima specified in this Notice. The seat manufacturer or organisation responsible for any necessary seat modifications should declare such deformation data to enable an assessment to be made of its significance in the specific seating layout. (See paragraphs 5.3 and 5.7.)

**NOTE:** The seat backs of aisle seats need not be maintained in the essentially upright position where this would facilitate improved access to the escape routes, provided that the minimum access to the exit required by paragraph 4.1 is maintained.

4.4 The interior surface of each exit hatch shall be free of any significant projection which might inhibit or otherwise delay the exit opening. The past practice of mounting stub armrests on the exit shall be discontinued.

4.5 The seat pan and lower back rest suspension of all seats bounding the access route(s) from the cabin aisle to the emergency exit shall be free from any gaps which might entrap a foot or other part of a person standing or kneeling on the seat. (See paragraph 5.8 of this Notice.)

5 ADDITIONAL INFORMATION

5.1 When measuring the minimum access width between seat rows leading to Type III emergency exits, seat pans (if able to tip up) are to be down and seat backs must be in the upright (take-off and landing) position.

5.2 No alleviation to these requirements will be granted on the basis of deformable soft furnishings, except that for Type III emergency exits only some projection of the seat cushion above the lower sill height may be permitted provided that this projection does not impede the rapid opening of the exit. Such configurations will be the subject of individual evaluation.

5.3 Where a particular emergency exit is larger than the defined measurements of BCAR and JAR, it is permissible when establishing compliance with paragraph 4.3, to assume the required minimum exit size and the maximum step-up and step-down limitations of BCAR or JAR provided that this required minimum exit size, when superimposed on the actual emergency exit, falls within the boundary of the actual emergency exit aperture. If this results in a vertical overlap between seat squab and lower sill it shall be shown that the resulting interference will not restrict the removal and disposal of the exit hatch.

5.4 For seating configurations where there is a dual access route to a Type III exit, or a single or dual access route to a Type IV exit from the cabin aisle, a vertically projected access width of at least 6 inches should be provided. Small reductions in this access may be considered where there is evidence to demonstrate that the features of the specific configuration can achieve equivalent ease of access to, and egress rate through, the exit.

5.5 It is a requirement that fold-up meal tables are correctly stowed for take-off and landing. If, however, having increased the seat pitch, particular seat back meal tables are no longer used, they must either be removed from the seat, or their function inhibited to ensure that they cannot inadvertently obstruct the access to the exit. Where tables are retained for use at seats adjacent to the access route, the latches shall be sufficiently reliable and adequately protected against inadvertent release.
5.6 For the more conventional forward facing seating layout, the instruction placards, indicating the correct method of opening and disposal of the exit hatch, should be fixed at approximately eye level to the seated occupant on each seat immediately forward of the access route either on the upper seat back itself or on the outer face of the stowed meal table (where fitted). Where face-to-face seating makes such a location ineffective, placards, again at approximately eye level to the seated occupant, mounted on either side of the exit and visible to the occupants of the affected seat rows would be acceptable. Where such seating is not symmetrical about the exit centre line it may be necessary to locate an additional placard on the exit itself, to ensure good visibility to the seated passengers. Wherever possible, a pictorial instruction placard, comparable with that contained in the Cabin Safety Leaflet, should be used. (See paragraph 5.9 of this Notice.)

5.7 Where break forward facilities are provided on seat backs in seat rows bounding access routes, it is recommended that, wherever practicable, this feature should be retained but limited in travel only to an extent necessary to ensure compliance with paragraph 4.3 of this Notice.

5.8 The assessment of potential entrapment should be made both with and without the seat cushions in place. Ideally the seat upholstery and seat suspension should be free of any gaps into which it would be possible to place a foot, hand or arm in such a way as to delay or hamper free movement of passengers to the exit. Where gaps are unavoidable, their location and shape should be evaluated subjectively to assess the likely hazard. Any gap of greater than one inch into which a hand or foot may enter is considered to be unacceptable.

5.9 All modifications to seats, or to their installation, necessary to achieve compliance with the requirements of this Notice shall be the subject of the appropriate BCAR Section A major modification procedure. The Instruction Placards required by paragraph 4.2 together with the associated Cabin Safety Leaflet should be submitted to the CAA Operations Inspectorate for agreement prior to the modification being submitted to the CAA Safety Regulation Group.

6 CANCELLATION This Notice cancels Airworthiness Notice No. 79, Issue 2, dated 16 March 1987, which should be destroyed.
Class C And D Cargo Or Baggage Compartment – Fire Containment Capability

1 APPLICABILITY This Airworthiness Notice is applicable to all UK registered aeroplanes exceeding 5700 kg MTWA for which a Type Certificate in the Transport Category (Passenger or Cargo) was first issued (whether in the UK or elsewhere) on or after 1st January 1958 and fitted with Class C or D cargo or baggage compartments exceeding 200 cubic feet in volume.

2 INTRODUCTION

2.1 The Airworthiness Standards contained in JAR-25 and BCAR Chapter D4-3, include requirements for cargo or baggage compartments which are sub-divided into five classes, namely, A, B, C, D and E. The classification of compartments is based primarily on the ease of access and the capability of the compartment to contain a fire. Class B, C, D and E cargo and baggage compartments are required to have liners in order to protect the structural integrity of the aeroplane from the effects of fire. Class B and E cargo or baggage compartments are not the subject of this Notice.

2.2 As a consequence of an in-flight fire on a public transport aeroplane, the FAA has conducted a series of tests at their Technical Centre to investigate the capability of three non-metallic liner materials; glass fibre reinforced resin, kevlar and nomex (in monolithic form) to resist flame penetration under conditions representative of actual cargo or baggage compartment fires. These tests were conducted in simulated Class C and D compartments with bulk-loaded baggage typical of that found in service.

2.3 As a result of these full-scale fire tests, the FAA determined that fire could rapidly burn through monolithic nomex or kevlar while the glass fibre reinforced resin panels proved to be satisfactory. The FAA, therefore, concluded that improved standards were warranted, since the kevlar and nomex liners had not fully met the current fire penetration requirements of FAR 25.855, i.e. the 45° bunsen burner test.

2.4 The FAA (Docket No. 24185) amended FAR Part 25 to require this new fire test standard on all newly designed aeroplanes for which an application for a type certificate is made after the 16 June 1986. The UK has also adopted such standards through equivalent amendments to JAR-25 introduced at Change 12.

2.5 The improved standard of fire containment testing of cargo or baggage hold liners is contained in Part III of Appendix F to JAR-25, and consists of a 5 minute resistance to fire test on a representative specimen of the cargo liner panels and attachments, using a 2 gallon (US)/hour Kerosene burner (identical to that as used to show compliance with Airworthiness Notice No. 59) as the test standard.

2.6 For those aeroplanes defined in paragraph 1 already in service, or to be introduced into service, the CAA intends, by this Notice to require, for those aeroplanes which are not fitted with glass fibre reinforced resin or aluminium alloy liners, that such aeroplanes shall be equipped with cargo or baggage compartment liners which comply with JAR 26.155(a) and (b).

2.7 The FAA have issued FAR Amendment 121-202 which prescribes requirements similar to the contents of this Notice No. 80.
2.8 Although testing has shown that aluminium alloy panels in thicknesses typical of the then current installations are not capable of fully meeting the fire containment standards of Change 12 to JAR-25 the CAA consider their capability to be acceptable for aeroplanes certificated prior to 1 July 1989.

3 COMPLIANCE

3.1 With effect from 1 July 1989, all Class C and D cargo or baggage compartments exceeding 200 cubic feet in volume of aeroplanes defined in paragraph 1 above, shall comply with the requirements of this Notice.

4 REQUIREMENTS

4.1 In addition to meeting the existing flammability requirements of JAR 25.853, JAR 25 Appendix F, Part I or Part III, or BCAR D4-3, paragraph 6.1, as applicable, the following shall apply.

4.1.1 Class C and D cargo or baggage compartment side wall or ceiling liner panels shall be constructed of glass fibre reinforced resin, or materials which satisfy the requirements of JAR 25.855(c), or an equivalent fire test criteria agreed with the CAA.

4.1.2 For currently certificated aeroplanes, which are fitted with aluminium alloy side walls and ceiling liner panels, these panels will continue to be acceptable (see paragraph 2.8).

4.1.3 All newly designed aeroplanes for which an application for a Type Certificate is made after the 16 June 1986 shall comply with the requirements of JAR-25, Change 12 or subsequent changes/amendments as applicable.

4.1.4 For compliance with this Notice the term liner includes any design feature, such as a joint or fastener, which would affect the capability of the liner to safely contain a fire.

5 ADDITIONAL INFORMATION The current requirements of JAR 25 Appendix F, Part I, paragraph (a)(2)(iii) include floor panels for Class C and D cargo or baggage compartments.

6 CANCELLATION This Notice cancels Airworthiness Notice No. 80, Issue 2, dated 18 August 1989, which should be destroyed.
Emergency Power Supply For Electrically Operated Gyroscopic Bank And Pitch Indicators (Artificial Horizons)

1 INTRODUCTION

1.1 Studies of those aircraft accidents and incidents in recent years which have involved total loss, or interruption, of generated electrical supplies on public transport aircraft, indicate that a major factor in the ability of the crew to maintain safe flight is the continuation of presentation to the pilot of reliable aircraft attitude information. Two fatal accidents since 1968 have been attributed to failure of power supplies resulting in the loss of horizon information for flight in blind conditions. Incidents have also occurred which could have been catastrophic if the crew had been totally dependent on horizon instrument, rather than visual, information.

1.2 All public transport aircraft operated on the United Kingdom Register the safety of which depends on electrical services, are equipped with some form of standby or emergency electrical power supply. On many aircraft these emergency supplies are provided by batteries of sufficient capacity to maintain essential services for a flight time sufficient to reach an airfield and make a landing. However, on a number of aircraft types the adequacy and duration of these supplies is critically dependent on crew response time in recognising the emergency, and in completing particular drills to isolate the battery supply to prevent it being discharged into loads on the main electrical system. It is considered that the ability of the crew to cope with a major interruption of electrical supplies would be improved if they had knowledge that continuity of horizon information was not totally dependent on their prompt and correct execution of emergency drills.

1.3 The purpose of this Notice is to publish a requirement for the retrospective modification of certain classes of aircraft to ensure that continuity of horizon information is maintained.

1.4 Aircraft types fitted with air driven gyroscopic bank and pitch indicators are exempt from the requirements of this Notice.

2 REQUIREMENT

2.1 Compliance with paragraphs 2.2 and 2.3 of this Notice, or with a CAA approved alternative providing an equivalent level of safety, is required as soon as practical but not later than 1st January 1974, for,

(a) aircraft certificated in the Transport Category for the carriage of more than 19 persons over the age of three years, and

(b) aircraft the maximum authorised weight of which exceeds 15,900 kg.

2.1.1 Where it can be shown that an aircraft detailed in 2.1 (a) or (b) will be permanently removed from service prior to the 1st January 1975, the Authority may, on application, waive the requirements of this Notice where it is satisfied that compliance would not be justified in the circumstances of the particular case.

2.1.2 Compliance will also be required for newly constructed aircraft the maximum authorised weight of which exceeds 5700 kg, for which a UK Certificate of Airworthiness in the Transport Category is first issued on or after 1st January 1974.
2.2 Where it cannot be shown that in the event of a total failure of the main electrical generating system, an adequate supply will be available automatically to a suitable bank and pitch indicator for a minimum period of 30 minutes, assuming that no special crew action is taken for 10 minutes, then a separate emergency supply, independent of the aircraft electrical generating system, which will automatically supply such an instrument, and its associated lighting, for a minimum period of 30 minutes, shall be provided.

2.2.1 Where the emergency supply is provided by a separate battery it is permissible for this battery to be (trickle) charged from the main electrical generating system, provided that the installation is such that the battery cannot discharge back into the main system.

2.3 The instrument supplied in accordance with 2.2 shall be
(a) the third instrument (standby horizon) where this is provided, or failing such provision,
(b) the bank and pitch indicator fitted to the Captain’s flight instrument panel.

2.3.1 Where the third instrument is fitted it shall:
(a) Operate independently of any other attitude indicating system.
(b) Be so located on the instrument panel that it will be visible to, and usable by, both pilots from their normal positions.
(c) Be compatible in presentation with the main attitude indicating system.
(d) Be fitted with a failure warning device.
Alternatively a means of indicating that the power supply to the instrument is operating correctly shall be provided.

2.3.2 Where the instrument on the Captain’s flight instrument panel is utilised:
(a) The circuitry to the instrument shall be modified, as necessary, so that transfer to the emergency source of supply is automatically effected in the event of failure of the main supply.
(b) The requirements of paragraph 2.3.1(d) shall be met.

3 ADDITIONAL INFORMATION

3.1 Representations have been made to CAA that under conditions of widespread adverse weather, or heavy traffic density at airports, a period of 30 minutes may be a less than desirable time for flight to a suitable airfield and landing, and clearly this period by itself is inadequate for long range aircraft.

3.1.1 The basis of UK certification of all long range, and of certain short/medium range, aircraft types is that after a period of interruption of electrical supplies it will be possible for the crew to re-establish sufficient normal, or emergency, generated power to support all necessary essential services, including the instrument covered by this Notice, for the remainder of the flight. The prescribed period of 30 minutes is considered to be adequate to allow for appropriate crew action for this class of aircraft.

3.1.2 For those shorter range aircraft that are totally dependent on battery power to support all essential services to the completion of the flight, a period of 30 minutes assuming a crew delay time of 10 minutes, is the mandatory minimum endurance of the emergency supply for the horizon instrument prescribed in this Notice. It is, however, strongly recommended that in circumstances where the crew do take prompt and correct actions in response to warning indications of the interruption of all generated electrical power, the aircraft installation should include adequate battery capacity to provide a 60 minute supply for both the subject instrument and the other services essential to complete the flight and make a landing.

3.2 A number of aircraft types already comply with the requirements of this Notice, or incorporate other special features which have been considered and accepted by the CAA as providing an equivalent level of safety.

3.3 In the case of aircraft types, of UK construction, which do not comply, discussions have been held with the Aircraft Constructors. Owners and Operators of such aircraft are,
therefore, recommended to contact the Constructor concerned for information regarding suitable modifications.

3.4 For future aircraft types it is intended to amend Section D ‘Aeroplanes’ and Section G ‘Rotorcraft’ of British Civil Airworthiness Requirements to call for a separate supply which, in the event of a failure of the main electrical supply, will be available automatically to a suitably illuminated bank and pitch indicator.
Electrical Generation Systems – Aircraft Not Exceeding 5700 kg Maximum Authorised Weight

1 INTRODUCTION

1.1 Investigations into accidents and incidents involving total loss of generated electrical power to aircraft, the maximum authorised weight of which does not exceed 5700 kg, have shown certain inadequacies in the standard of failure warnings and indications provided. Experience has shown that the loss of generated electrical power can remain undetected for a significant period of time, resulting in the serious depletion of the available battery capacity and reduced duration of supplies to essential services under these conditions.

1.2 The purpose of this Notice is to publish requirements for the retrospective modification of certain aircraft to ensure that a clear and unmistakable warning of loss of generated electrical power is given, and to preserve or provide sufficient electrical energy to operate essential services for an adequate period of time in the event of such a loss occurring.

2 REQUIREMENT

2.1 For all multi-engined aircraft, the maximum authorised weight of which does not exceed 5700 kg, compliance with paragraphs 2.2, 2.3, 2.4 and 2.5 of this Notice, or with a CAA approved alternative providing an equivalent level of airworthiness, is required. Compliance dates for this requirement were 31st December 1974 for Transport Category and 31st December 1975 for Private and Special Categories.

2.1.1 Where it can be shown that an aircraft is fitted with such limited electrical and radio equipment, or is certificated to operate under such limited conditions (e.g. VMC day only) that the loss of generated electrical power would not significantly prejudice safe flight, the CAA will, on application, waive the requirement of this Notice where it is satisfied that compliance would not be justified in the circumstances of a particular case.

2.2 Clear visual warning shall be provided, within the pilot’s normal line of sight, to give indication of, either

(a) reduction of the generating system voltage to a level where the battery commences to support any part of the main electrical load of the aircraft, or

(b) loss of the output of each engine driven generator at the main distribution point or busbars.

2.3 The battery capacity shall be such that in the event of a complete loss of generated electrical power, adequate power will be available for a period of not less than 30 minutes following the failure, to support those services essential to the continued safe flight and landing of the aircraft, (see paragraph 3.1). This includes an assumed period of not less than 10 minutes from operation of the warning specified in paragraph 2.2, for completion of the appropriate drills. This delay period may be reduced to not less than five minutes if the warning system is provided with attention getting characteristics (e.g. a flashing light). For the purpose of calculations it shall be assumed that the electrical load conditions at the time of failure warning are those appropriate to normal cruising flight at night (see paragraph 3).
2.4 Where all gyroscopic attitude reference instruments, i.e. bank and pitch indicator(s) and turn and slip indicator(s), are dependent on electrical power for their operation, at least one of these instruments shall continue to operate without crew action for the prescribed 30 minute period.

NOTE: (1) For certain aircraft types a turn and slip indicator may not be acceptable as the sole remaining attitude reference instrument.

NOTE: (2) Certain aircraft are equipped with both electrically operated and air driven attitude reference instruments. In such cases the air driven instrument(s) will be accepted as providing the emergency attitude information provided that the requirements of paragraph 2.4.1 are met.

2.4.1 The instrument(s) with which the requirement of 2.4 will be met shall be clearly designated, and,

(a) shall be so located on the instrument panel that it will be visible to, and usable by, the pilot from his normal position,

(b) shall be provided with means of indicating that the power supply to the instrument is operating correctly.

2.5 Precise drills covering crew action in the event of electrical generation system failures and malfunctions shall be included in the appropriate aircraft manual(s), together with a statement of the battery endurance under specified load conditions.

3 ADDITIONAL INFORMATION

3.1 When ascertaining that the installed aircraft battery capacity is adequate for compliance with 2.3, the following loads should be taken into account:

(a) Attitude information (where applicable in accordance with paragraph 2.4).

(b) Essential Radio Communication.

NOTE: For the purpose of calculations it will normally be accepted that intermittent use of a single VHF communication equipment satisfies this requirement. Utilisation on the basis of a total 15 minutes reception plus 3 minutes transmission in the 30 minute period would be an acceptable interpretation.

(c) Essential cockpit lighting.

(d) Pitot Head Heater (applicable only to those aircraft certificated for flight in icing conditions).

(e) Any other services essential for the continued safe flight and landing of the particular aircraft.

(f) Those services which cannot readily be shed when carrying out the drills required under paragraph 2.5.

3.1.1 In order to ensure that the essential services, taken into account in accordance with 3.1, will function adequately for the prescribed period, the calculation of the duration of battery supply should normally be based on the following assumptions:

(a) Only 75% of the ‘name plate’ rating of the battery is available (this is to take into consideration loss of capacity with age, and a realistic state of charge).

(b) The voltage/time discharge characteristic of the battery, appropriate to the load of the listed services, is not extended beyond a battery terminal voltage of 21.5 volts on a 24 volt system, pro rata for 12 volt systems, (this is to ensure that the voltage available throughout the prescribed period is adequate for satisfactory operation of the services).

NOTE: Only where compliance with this Notice cannot be shown within the criteria of paragraphs 3.1 and 3.1.1, will consideration have to be given to the fitment of additional, or larger capacity, batteries to particular aircraft.

3.2 Applications for the approval of modifications necessary to ensure compliance with the requirements of this Notice should be made in the manner specified in BCAR Sections A and B, Chapters A2-5 and B2-5.
4 CANCELLATION This Notice cancels Airworthiness Notice No. 82 Issue 1, dated 7 June 1973, which should be destroyed.
Fire Precautions – Aircraft Toilets

1 APPLICABILITY This Notice is applicable to all aircraft over 5700 kg operating in the Transport Category (Passenger).

2 INTRODUCTION
2.1 In view of the history of in-flight fires which have occurred in the toilet compartments of large transport category aeroplanes, a survey has been conducted to re-appraise the fire precautions on the various types of aircraft used by UK operators.

2.2 The results of this survey have shown that in some instances the design of receptacles (e.g. towel dispensers, waste containers), provided within toilet areas for the carriage of flammable materials and in particular flammable waste, does not comply with the current interpretation of published airworthiness requirements. In other instances the receptacles are not sufficiently robust to withstand the effects of wear and deterioration in service. The survey also showed that, regardless of notices prohibiting smoking in toilets, smoking does occur, and that, even when ashtrays are provided, they are often not used, and cigarette ends are deposited in other receptacles.

2.3 The purpose of this Notice is to publish requirements aimed at reducing the probability of persons smoking in toilet compartments and at minimising the potential fire hazard caused by persistent smokers.

3 BACKGROUND
3.1 When this Notice was first issued on 22 August 1974, the CAA required that an inspection be completed on toilet receptacles within one calendar month from the date of issue with repeat inspections at 1000 hourly intervals, however, as a result of a further survey it was concluded that some aircraft toilets had been allowed to deteriorate and were therefore out of compliance.

3.2 In order to re-establish the effectiveness of the Notice, a Letter to Operators (Nos. 554 and 554A) dated 11 July 1983 and 21 July 1983 respectively, were issued, which revised the inspection periods.

4 REQUIREMENTS
4.1 Inspection
At intervals not exceeding 72 hours elapsed time, or at such other intervals as may be agreed with the CAA on the basis of available data, the following inspection shall be performed:

(a) All receptacles shall be inspected to ascertain that all entry flaps or doors still operate, fit, seal and latch correctly, ashtrays are fitted, notices installed and receptacle stowage compartment is clean with all debris removed.

(b) Any defects revealed by the inspection of (a) are corrected.

This inspection shall be included in the Maintenance Schedules using the normal procedure.
4.2 **Prohibition of Smoking in Toilet Compartments**

4.2.1 Smoking shall not be permitted in toilet compartments.

4.2.2 No Smoking placards and ashtrays are required both inside and outside these compartments.

4.2.3 The No Smoking placards shall be displayed so as to be prominent to, and the ashtrays shall be obviously and conveniently placed for, those about to enter and those within these compartments.

4.3 **Re-Assessment**

4.3.1 Except where agreement has been obtained from the CAA that compliance would not be justified in the circumstances of a particular case, the design of all receptacles provided in the toilet compartments of aircraft over 5700 kg, certificated in the Transport Category (Passenger), shall be re-assessed against paragraph 5 of this Notice, and proposals shall be made, by the operators of such aircraft to the CAA for the incorporation of modifications necessary to show compliance, including a date (to be agreed by the CAA). The operator should consult the aircraft manufacturer regarding such modifications.

4.3.2 In the case of British manufactured aircraft, the CAA is discussing with the aircraft manufacturers suitable modifications to ensure compliance with paragraph 5 of this Notice.

5 **INTERPRETATION OF REQUIREMENTS**

5.1 BCAR Section D, Chapter D4-3 paragraph 9 states that all receptacles for used towels, papers and waste, shall be constructed of materials resistant to fire. The receptacles shall incorporate covers or other provisions for containing fires if started in the receptacle. Similar wording is provided in JAR 25.853(f).

5.2 For compliance to be shown, such receptacles (but see 5.4 for towel dispensers) shall be constructed of materials which are flame resistant*, and which in addition, will retain sufficient mechanical properties as to contain such a fire as may develop by burning of materials such as paper towels, as may be within the receptacle. (It should be noted that although a thermoplastic material may be flame resistant it would not necessarily retain adequate mechanical properties in the case of a fire.) The receptacle shall be completely enclosed with the exception of a self-closing entry flap or door, which itself shall be rigid, and when closed, form as airtight a seal as is practicable. Entry flaps or doors shall be designed so that they remain self-closing even after exposure to a fire within the receptacle.

**NOTE:** *Suitable methods for flame resistance testing are contained in JAR-25 Appendix F.*

5.3 It is, however, permissible for receptacles to be open topped provided that they are mounted in a cabinet which itself complies with 5.2. In this instance, the door of the cabinet shall be of a robust construction and such as to ensure an adequate seal and to withstand misuse in service. Such cabinets shall not contain other flammable materials, potential fire sources (e.g. electrical apparatus) or apertures which would either allow air to feed a fire or permit a fire to spread beyond the cabinet (e.g. through apertures provided for services).

5.4 It is accepted that some receptacles, e.g. paper towel dispensers, cannot readily be designed to meet the above requirements. In such instances they shall be so designed and positioned within the compartment to ensure that:

(a) the likelihood of the depositing of cigarette ends, etc., into them is minimised, and

(b) a fire, which could be expected to start in another container, cannot readily spread to them; for example, a paper towel dispenser must not be positioned adjacent to, or immediately above, either the entry flap or door of a waste container or an ashtray provided in the compartment.

6 **CANCELLATION** This Notice cancels Airworthiness Notice No. 83, Issue 4, dated 29 October 2001, which should be destroyed.
Airborne ILS (Localiser) VOR And VHF Communications Receivers – Improved FM Broadcast Interference Immunity Standards

1 INTRODUCTION

1.1 The previous issue of this Notice took account of actions by European states following the Special EUR RAN Meeting held in Vienna in 1994. Those actions were taken to protect ILS operations and to ensure the safety of aircraft fitted with navigation receivers that did not meet improved FM broadcast immunity standards established by ICAO. Operators were advised that, for a period from 1 January 1998 to 1 January 2001 (referred to in this Notice as the transition period), aircraft with equipment that did not meet the improved immunity standards may be subject to operational restrictions where an interference risk had been identified.

1.2 The interference risk arises following the decision taken at the 1979 World Administrative Radio Conference (WARC-79) of the International Telecommunication Union, which became effective from 1 January 1998, to extend the VHF FM sound broadcasting band from an upper limit of 100 MHz to 108 MHz in ITU Region 1 and parts of Region 3, i.e. Europe, Africa, Russia and the Middle East. Use by broadcasters of the extended band increases the risk of interference to the aeronautical VHF navigation (ILS localiser and VOR) and VHF communication services.

1.3 This Notice is now further revised to take account of JAA standards and guidelines, to clarify the situation concerning the carriage of non-compliant equipment.

2 EQUIPMENT STANDARDS

2.1 To counteract the expected interference problem, ICAO, in association with the aeronautical industry, developed and agreed improved performance standards for ILS localiser, VOR and VHF communications receivers (now incorporated in ICAO Annex 10, Volume I Radio Navigation Aids, Fifth Edition dated July 1996, Chapter 3, Paragraphs 3.1.4, 3.3.8, and Volume III, Part II Voice Communications Systems, Paragraph 2.3.3).

2.2 Acceptable Minimum Operational Performance Specifications, consistent with ICAO Annex 10, are shown in the following table:

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>JAA</th>
<th>EUROCAE</th>
<th>RTCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILS Navigation</td>
<td>JTSO-2C36f</td>
<td>ED-46B</td>
<td>DO-195</td>
</tr>
<tr>
<td>VOR Navigation</td>
<td>JTSO-2C40c</td>
<td>ED-22B</td>
<td>DO-196</td>
</tr>
<tr>
<td>VHF Communication</td>
<td>JTSO-2C38e</td>
<td>ED-23B</td>
<td>DO-186</td>
</tr>
</tbody>
</table>

2.3 ICAO Annex 10 recommends that equipment meeting the improved immunity performance standards should be placed into operation at the earliest possible date.
3 AERONAUTICAL AND BROADCAST STATION PLANNING
3.1 During the current transition period, the planning for ILS localiser, VOR and FM broadcasting stations is based on protection criteria which recognises that non-FM immune aircraft receivers are still in service. After 1 January 2001, all new broadcasting stations will be planned using less stringent criteria on the basis that ILS localiser and VOR receivers meet the improved FM immunity standards.
3.2 During the transition period, the station planning policy does not offer any additional protection to non-FM immune VHF Communication receivers.

4 CONSEQUENCES OF NON-COMPLIANCE WITH THE ICAO STANDARDS
4.1 The continued operation after 1 January 1998 of non-immune ILS localiser and VOR receivers render those receivers liable to interference which could lead to a serious degradation in navigation performance. Aircraft with non-immune ILS localiser or VOR receivers may be subject to operating restrictions that deny those aircraft the use of routes, terminal area and instrument approach procedures affected by interference.
4.2 Whilst ICAO Annex 10 and the Minimum Operational Performance Specifications referenced in paragraph 2.2 have specified an improved interference immunity standard for VHF Communications receivers, the risk to safety due to FM broadcast interference with communications is less than that for navigation. Furthermore, many aircraft now comply with this aspect of the ICAO standard having met the new requirements for installation of VHF communications receivers with 8.33 kHz channel spacing. Recognising the reduced risk, paragraph 5 of this Notice permits a relaxation from the ICAO standard for VHF communication receivers carried in aircraft of 5700kg MTWA or less.

5 REQUIREMENTS
5.1 Requirements for ILS localiser and VOR receivers during the transition period:
ILS localiser and VOR receivers not meeting the improved FM broadcast immunity standards may continue to be used for IFR operations until 31 December 2000 provided that:
(a) Means are provided to identify to flight crews non-immune receivers, so that any consequential operating restriction, as notified in Aeronautical Information Publications (AIP), may be observed. A flight deck placard, visible to the flight crew, identifying the affected navigational system, is an acceptable means of compliance; and
(b) Air Operator Certificate (AOC) holders produce operational and maintenance procedures to comply with the above requirements and the operating restrictions.
5.2 Requirements for ILS localiser and VOR receivers effective from 1 January 2001:
(a) ILS localiser and VOR receivers, required to be carried by UK registered aircraft for the purposes of operations under Instrument Flight Rules (IFR) in accordance with applicable airworthiness and operational regulations, must be of a type approved as complying with the improved FM broadcast immunity standard.
(b) Where non-immune ILS localiser and VOR receivers remain installed, (i.e. those carried in addition to the minimum number required by applicable airworthiness and operational regulations to meet IFR), they must be identified to the flight crew and their use restricted to Visual Flight Rule (VFR) operations.

NOTE: For aircraft of 5700 kg MTWA or less, an acceptable means of compliance is to placard and restrict non-immune receivers to operations permitted under the Restricted Approval Category LA Class 3 (see paragraph 5.4), irrespective of the approval category for that equipment.
5.3 Requirements for VHF communications receivers effective from 1 January 2001:
(a) VHF communications receivers, required to be carried by UK registered aeroplanes over 5700 kg MTWA for the purposes of operations under IFR in accordance with applicable airworthiness and operational regulations, must be of a type approved as complying with the improved FM broadcast immunity standard.
(b) Where non-immune VHF communications receivers remain installed in UK registered aircraft over 5700 kg MTWA, (i.e. those carried in addition to the minimum number required by applicable airworthiness and operational regulations to meet IFR), they must be identified so as to alert flight crews to the potential risk of interference.

(c) UK registered aircraft of 5700 kg MTWA or less, and UK registered helicopters, may continue to be operated under IFR with non-immune VHF communications receivers provided that the receivers are identified so as to alert flight crews to the potential risk of interference.

NOTE: (1) Paragraph 5.3 is only applicable to aircraft in UK airspace. These statements do not address flights outside of the UK.

NOTE: (2) CAA will continue to monitor reports of interference and, if necessary in the light of experience, reconsider this relaxation from the ICAO standard for VHF communication receivers carried by aircraft of 5700 kg MTWA or less.

5.4 Operating limitations must continue to be observed for ILS localiser, VOR and VHF communications receivers carried in aircraft of 5700 kg MTWA or less, and approved in the Restricted Category Light Aircraft (LA) Class 3 (see BCAR Section R, Chapter R3-3.4 and Appendix to Chapter R3-1, 1.1.4, or CAP 208 Volume 2 – Foreword, paragraph 3.2).

NOTE: Such equipment may not be used to comply with a requirement for the mandatory carriage of radio equipment.

6 UK CAA AERONAUTICAL INFORMATION CIRCULAR

Reference should be made also to UK Aeronautical Information Circular 87/2000 (Pink 7) published on 24th August 2000 which is available on web site http://www.ais.org.uk/.

7 FURTHER INFORMATION

Aircraft operators are advised to contact their equipment suppliers to obtain information on the availability of modification kits or replacement equipment meeting the improved FM immunity standards. This information is not available from CAA.

8 AVAILABILITY OF DOCUMENTS

8.1 Copies of EUROCAE documents may be purchased from:
EUROCAE,
17 rue Hamelin,
75783 PARIS Cedex 16,
France.
Fax: 33 1 45 05 72 30, or web site: www.eurocae.org.

8.2 Copies of RTCA documents may be purchased from
RTCA Inc.,
1828 L Street, NW,
Suite 805,
Washington,
DC 20036,
USA,
Tel: 1 202 833 9339, Fax: 1 202 833 9434 or E:mail: info@rtca.org
8.3 Copies of ICAO documents may be purchased from
Document Sales Unit,
International Civil Aviation Organisation,
999 University Street,
Montreal,
Quebec,
Canada
H3C 5H7.
Fax: 1 514 954 6769, or e-mail: sales_unit@icao.org

8.4 In the UK, the ICAO agent is
Documedia Ltd,
37 Windsor Street,
Cheltenham, Glos.,
GL52 2DG.
web site: www.documedia.co.uk.

9 CANCELLATION

This Notice cancels Airworthiness Notice No 84, Issue 5, dated 23 October 2000, which should be destroyed.
CAA Approvals – Non Transferability

1 INTRODUCTION This Notice provides advice and information to CAA Approved Organisations concerning the legal implications and CAA approvals policy relating to company name changes and/or the transfer of business and assets to another company.

2 GENERAL The present business climate is resulting in increasing numbers of CAA Approved Organisations either changing their name and/or transferring their business and assets to another company. It is essential therefore that registered companies advise the CAA of such changes before they take place, and understand the impact the changes may have upon continuation of their CAA approval.

NOTE: Under the Civil Aviation Act, no information furnished to the CAA under the ANO shall be disclosed by the CAA except under the specific provisions of the Act.

3 CAA APPROVALS

3.1 CAA Approval is granted to a legal entity and, in the case of an organisation, this is clearly identified with its company registration number. A CAA Approval once granted is not transferable from one registered company to another.

3.2 When the business and assets of a CAA Approved Organisation (company A) are sold or transferred to another company (company B), the CAA Approvals issued to company A become null and void at that time and no further design or release certifications may be made. If company B is not already approved by the CAA, for it to operate as a CAA Approved Organisation, it will be necessary to make an application for a new approval to the CAA. Since each CAA Approval is identified by a unique reference number, the issue of a new CAA approval will necessitate amendment of company documentation to show the new number. In many cases the new CAA approval can be issued in an expeditious manner providing no other changes have occurred in the company which would affect the approval. If company B already holds a CAA approval, it may be necessary for it to apply to vary the approval to assimilate the activities of company A and in such circumstances advice should be sought from the CAA prior to the acquisition.

3.3 Where a company changes its name but its company registration number remains the same, the legal entity has not changed and therefore the existing CAA approval can continue, using the same approval number, providing adequate prior notice is given.

3.4 In either case, a CAA Certificate of Approval will need to be issued to approve the new company or record the change of name. Therefore, it is important for organisations to contact the CAA at the earliest opportunity when a change of status as detailed above is to take place. It should be noted that an appropriate Certificate of Incorporation (if applicable) will be required as evidence of the change before a new approval certificate can be issued.

3.5 Any fees associated with the investigation of approvals and the issue of new documents will be in accordance with the current CAA Scheme of Charges.
Communications On Safety Matters

1 From time to time people have occasion to write to the CAA or one of its officials about a significant safety matter. It is clearly important that there should be some way in which senders can verify that such information has been received by the CAA and equally important that the CAA should know that such information has been sent.

2 It is the intention of the CAA that any item of correspondence is acknowledged within 7-10 days. If the sender does not receive a satisfactory indication that the communication has been received by the CAA within that time they should make further direct contact with the addressee.

3 Occurrence Reports (Mandatory or Voluntary) are not normally acknowledged individually. Receipt by the Authority is, however, acknowledged by inclusion in the monthly Occurrence List widely circulated to all organisations participating in the Occurrence Reporting System. Any Reports submitted on a confidential basis will be individually acknowledged when a means of contact is provided.

3.1 Any queries relating to Occurrence Reports should be directed to the Safety Investigation and Data Department:
Telephone: Crawley (01293) 573220
Telex: 878753
Facsimile: Crawley (01293) 573972

4 If after further contact with the addressee there is still doubt that the item of correspondence has been received, the sender should contact the following as appropriate:
For matters relating to Airworthiness and Operational Safety:
Group Director Safety Regulation
Safety Regulation Group
Aviation House
Gatwick Airport South
West Sussex RH6 0YR
Telephone: Crawley (01293) 573078 Telex: 878753
Facsimile: Crawley (01293) 573999

4.1 For matters relating to the National Air Traffic Services:
Chief Executive
National Air Traffic Services Limited
Room T1504
One Kemble Street
London WC2B 4AP
Telephone: 020 7832 5900

5 CANCELLATION This Notice cancels Airworthiness Notice No. 86, Issue 5, dated 21 July 1995, which should be destroyed.
Electrical Generation Systems – Bus-Bar Low Voltage Warning Single-Engined Aircraft With a UK Certificate of Airworthiness

1 INTRODUCTION
1.1 When Airworthiness Notice No. 82 was introduced in June 1973, it was considered inappropriate to impose the whole or part of those requirements on single-engined aircraft. Since that time, systems which were once fitted only in the more complicated twin-engined general aviation aircraft, have now been developed and fitted to single-engined aircraft. Thus, greater reliance is being placed on the integrity of the electrical power supplies for such aircraft.

1.2 As a result of the above, Issue 1 of this Notice was published in December 1986. This Notice required certain single-engined aircraft to be equipped with low voltage warning devices to give indication to the pilot of when the aircraft’s battery commences to support all or part of the electrical load of the aircraft. Compliance was required by 1 January 1988.

1.3 Since that time, a number of incidents and accidents have continued to occur on single-engined aircraft equipped with electrically operated systems. Investigations have shown that a general misunderstanding exists as to the categories of single engined aircraft (depending upon the level of equipment installed) that have to be equipped with low voltage warning devices.

1.4 The purpose of this Notice is to extend and clarify the requirement for a clear and unmistakable warning of the loss of generated electrical power (to the main bus-bar) as detailed in paragraph 2.1.1. This will be by the introduction, where necessary, of retrospective modifications.

2 REQUIREMENTS
2.1 For all single-engined aircraft with a UK Certificate of Airworthiness (not already modified to meet the requirements of Issue 1 of this Notice) equipped with an engine driven electrical generating system, compliance with paragraphs 2.2 and 2.3, or with a CAA approved alternative providing an equivalent level of airworthiness is required not later than 31 December 1992, or next annual check whichever is the latest.

2.1.1 Where an aircraft is equipped to operate under day VMC conditions only and the loss of generated electrical power could not prejudice continued safe flight and landing, the CAA on application will waive the requirement of this Notice, where it is satisfied that compliance would not be justified in the circumstances of a particular case.

2.2 A clear and unmistakable red visual warning shall be provided, within the pilot’s normal scan of vision, to give indication of the reduction of the voltage at the aircraft bus-bar to a level where the battery commences to support all or part of the electrical load of the aircraft.

2.3 Guidance shall be given in the appropriate aircraft manual(s) on any actions to be taken by the pilot should the warning operate. See also paragraph 3.2.
3 ADDITIONAL INFORMATION

3.1 The recommended voltage levels for operating the warning required under paragraph 2.2 of this Notice are 25 volts to 25.5 volts for a nominal 24 volt dc system and 12.5 volts to 13 volts for a nominal 12 volt dc system.

3.2 The battery duration should be sufficient to make a safe landing and should be not less than 30 minutes, subject to the prompt completion of any drills. This duration need only be a reasonable estimate and not necessarily calculated by a detailed electrical load analysis. However, when making this estimate, only 75% of the battery nameplate capacity should be considered as available because of loss of battery efficiency during service.

3.3 Owners and operators are recommended to contact the aircraft constructor or main agent for information regarding suitable means of compliance with this Notice.

3.4 Owners and operators may, on application, submit proposals for their own means of compliance and should refer to the guidelines laid down in CAP 562, Civil Aircraft Airworthiness Information and Procedures (CAAIP) Leaflet 11-10.

4 CANCELLATION  This Notice cancels Airworthiness Notice No. 88, Issue 2, dated 17 March 1992, which should be destroyed.
Continuing Structural Integrity of Transport Aeroplanes

1 Issue 2 of this Notice has for many years required additional structural review and inspection for ageing aeroplanes. Selected types have previously been the primary focus of ageing aircraft activity by the Type Certificate Holders (TCH), Operators and Authorities alike. Continued investigations in the world fleet have shown that interaction between fatigue and corrosion and the practicality of detection of damage is such that this activity needs to be extended to cover all ageing aeroplanes in respect of fatigue, corrosion and repairs. To this end, action is being taken in the USA and Europe and this Notice ensures the UK activity is current in respect of the latest JAA guidelines.

2 APPLICABILITY
This Notice applies to all ageing transport aeroplanes used for commercial operation and certificated to JAA, USA or UK requirements at a MTWA exceeding 2730kg and operating under an AOC according to ANO Article 130. Ageing aeroplanes are considered to be those that have exceeded half their published design life goal or fifteen years since manufacture if not otherwise provided.

3 INTRODUCTION
3.1 Transport Category Aeroplanes are certificated, in respect of their structural integrity throughout their operational life, in accordance with either of the following principles (or a mixture of both):
(a) Aeroplanes or structural members of aeroplanes accepted on a ‘Safe Life’ principle.
(b) Aeroplanes or structural members of aeroplanes accepted on a ‘Fail Safe or Damage Tolerant’ principle.

3.2 The purpose of this Notice is to introduce procedures whereby aeroplanes or structural members of aeroplanes originally certificated to JAA, UK or US Fatigue, Fail Safe, or Damage Tolerant requirements may continue to be certificated in the UK without at some stage having additional restrictions applied to their operational life (whether originally finite or undeclared). This Notice is raised to Issue 4 to restate and revise these procedures in line with Document JAR.AGM.S1.P3.LF11 - Leaflet No. 11: Continuing Airworthiness of Ageing Aircraft Structures.

4 BACKGROUND
4.1 UK certification of early examples of ‘fail safe’ aeroplanes was given on the assumption that, within the expected operational life time of the aeroplane, any fatigue damage to, or failure of, single structural members would be so gross as to be readily found during routine maintenance before it caused unacceptable weakening of the structure.

4.2 However, service experience has shown that in some cases special inspections have been necessary and that, for aeroplanes kept in service up to (and perhaps, in future, to well beyond) the maximum operational life expected at the time of original certification, it is necessary to consider more than the damage to, or failure of, a single member in an otherwise sound structure; the possibility of additional weakening (as a result of such causes as accidental damage or imperfect workmanship, corrosion or fatigue of alternative
load paths which would not be critical on their own but may be in the event of a single member failing), cannot be ignored.

4.3 In 1988 events in the world fleet have indicated that the practical limitations of inspection procedures, effects of corrosion and the influence of structural repairs required further consideration in the work to be carried out. The guidelines of this work have been further developed over the past ten years by the Airworthiness Assurance Working Group (formerly Ageing Aircraft Task Force) representing USA and European Operators, Type Certificate Holders and Regulatory Authorities. In the USA, operating rules have been established to mandate development of this work for aircraft types in scheduled operations and also for commuter and charter services. Most recently, the European Ageing Aircraft Working Group have published guidelines for JAA member states (Document JAR.AGM.S1.P3.LF11 - Leaflet No. 11) recommending a common approach for continued airworthiness of ageing aircraft structures. This Notice reflects the intent of those recommendations.

5 STRUCTURAL INTEGRITY REVIEW

5.1 The work on Structural Integrity of ageing aircraft includes and is being extended in respect of the following issues:

(a) A review of all published structural information for the type design (service bulletin, information letters etc.) to establish which structural inspections should be superseded by modifications (terminating action).

(b) Development of a comprehensive Corrosion Control Programme. (See also Airworthiness Notice No. 73.)

(c) Development of Repair Assessment Programmes (RAP) to assess the adequacy of structural repairs and their influence on inspection intervals.

(d) Review and development of Supplemental Structural Inspection Programmes.

(e) Evaluation of each type design’s susceptibility to Widespread Fatigue Damage and development of programmes for corrective action.

(f) An overall rationalisation of maintenance programmes to accommodate the foregoing.

(g) Provision of a review procedure for assessment of each of (a) to (f) on a regular basis. To achieve maximum benefit the work should be carried out where possible by joint cooperative teams involving the TCH and operators for a particular aeroplane type together with the appropriate regulatory authorities. Further details can be found in JAA Leaflet No. 11 as referenced above.

5.2 The extent of the investigation required will depend on the original certification basis of the aeroplane.

6 COMPLIANCE

6.1 The role of the Type Certificate Holder

The aeroplane TCH’s role will be to produce documents on each of the above topics 5.1(a) to (g) detailing the agreed necessary actions to maintain airworthiness. In addition, the TCH should continually review the effectiveness of these documents in conjunction with the operator.

6.2 The role of the CAA

On publication of acceptable Documents by the TCH addressing issues 5.1(a) to 5.1(g), the CAA will do one or more of the following:

(a) approve the incorporation of the Documents or approved variations there from, in the operator’s maintenance data, as a basis for compliance with sub-paragraph 6.3;

(b) mandate the necessary actions by issuing an airworthiness directive for aeroplanes where the CAA has responsibility as State of Manufacture for the TCH;
(c) review, and might alter the status of, any previously applied life limitations, structural service bulletins listed in CAA Additional Directives or the CAA Mandatory Modifications and Inspections Summary;

(d) permit operation of the aeroplane, so far as structural integrity is concerned, so long as the data in the Documentation remains valid.

6.3 The role of the operator

(a) The operator must satisfy the CAA that the maintenance programme and associated procedures incorporate the TCH’s recommendations in respect of issues 5.1(a) to 5.1(f) where available, or approved alternatives as appropriate. Associated procedures may include special actions necessary to address issue 5.1(c) in particular.

(b) Whilst the primary responsibility for the initial development of the Documents relating to issues 5.1(a) to (f) is placed on the TCH, their implementation and subsequent effectiveness cannot be based solely on their own test experience and analysis; knowledge of service experience is a vital ingredient. Procedures in support of issue 5.1(g) should therefore be in place for recording and reporting to the Type Certificate Holder information on:

   (i) structural defects,
   (ii) the incorporation of all significant structural repairs and modifications,
   (iii) corrosion findings, and
   (iv) operational usage and loading events outside of the design assumptions as reflected by the Type Limitations and Maintenance Instructions.

7 CANCELLATION

This Notice cancels Airworthiness Notice No. 89, Issue 3, dated 29 October 2001, which should be destroyed.
Maximum Total Weight Authorised For Agricultural Operations And Other Aerial Applications

1 CAA policy on United Kingdom certification of aeroplanes which are intended to be used for agricultural purposes (hereinafter referred to as agricultural aeroplanes) has, hitherto been to certificate these aeroplanes at the Maximum Total Weight Authorised (the Normal MTWA) at which compliance has been established with the national airworthiness requirements of the country of origin.

2 Certain countries, notably USA, Canada, Australia and New Zealand, permit agricultural aeroplanes to be operated at weights in excess of the Normal MTWA, the extent of excess being determined by the minimum value of manoeuvring load factor at which it is considered that airworthiness structural requirements can be met when account is taken of the typical pattern of loading appropriate to agricultural operations.

3 The CAA is, as a result of considerable investigation, satisfied that a capability for meeting all airworthiness structural requirements at a minimum positive manoeuvring load factor equal to 3.0 coupled with operational limitations appropriate to operating at weights exceeding the Normal MTWA, is acceptable for agricultural operations, and will not result in a significant increase in the risk of structural failure. The CAA will require evidence to substantiate the continued validity of any fatigue life limitations (or to assess the need to specify a fatigue life) for the particular aeroplane type.

4 In respect of aeroplanes of United Kingdom or foreign origin, application for an increase in MTWA for Agricultural Operations may be made to the CAA on Form AD 282, for approval as a Major Modification.

4.1 The MTWA for Agricultural Operations shall not exceed whichever is the least of (a) to (d) and shall be subject to the conditions of paragraph 4.2.

(a) The weight at which compliance with specific airworthiness structural requirements can be established at a limit positive manoeuvring load factor equal to 3.0.

NOTE: In the absence of evidence from the aeroplane designer substantiating a greater weight, this weight will be limited to 120% of the Normal MTWA (or 130% of the Normal MTWA for aeroplanes originally certificated as utility category or semi-aerobatic aeroplanes).

(b) The weight at which a minimum gradient of climb of 4.5% in the take-off configuration can be achieved at the altitude and temperature at the take-off surface.

(c) The maximum weight recommended by the aeroplane designer for agricultural operations.

(d) The weight at which compliance can be established to the satisfaction of the CAA with those flight handling requirements applicable at initial certification in the country of origin.

4.2 The conditions and further limitations associated with the MTWA for Agricultural Operations are as follows:-

(a) Any increase in Maximum Landing Weight shall be substantiated by the aeroplane designer.
(b) Operation at weights in excess of the Normal MTWA shall be restricted to those flights in the course of which aerial application is to be carried out. The Normal MTWA shall not be exceeded on flights made for other purposes including ferrying or positioning the aeroplane.

(c) Provision shall be made for rapid jettisoning of the hopper contents and shall be placarded.

(d) Information on the effect of the increase of weight on the fatigue life of the aeroplane, in the form of a fatigue analysis, shall be provided by the aeroplane designer. Failing this the applicant shall provide evidence of the operating hours achieved by high-time aeroplanes of the same type, together with the associated operating weights, from which the CAA will assess the need for the setting of a fatigue life.

(e) The use of wing-flaps shall be restricted to take-off and landing, unless en-route use at the increased weight is substantiated by the aeroplane designer.

(f) The Never Exceed Speed, $V_{NE}$, at the increased weight shall be equal to the Design Manoeuvring Speed, $V_A$, established for the Normal MTWA, and shall be placarded.

(g) The flying qualities shall be established, to the satisfaction of the CAA, to be adequate for the role, when the aeroplane is operated in accordance with these limitations.

(h) If the overload condition requires particular care to remain within the allowable centre-of-gravity limits, or if ballasting is required, then appropriate loading instructions and placards shall be provided.

(i) Intentionally left blank

(j) Appropriate amendments shall be made to the Approved Maintenance Schedule to take account of any additional inspections and life limitations recommended by the aeroplane designer or required by the CAA appropriate to agricultural overload.

NOTE: If as a result of the weight increase the aeroplane exceeds 2730 kg MTWA, maintenance may continue to be in accordance with the provisions of the Light Aircraft Maintenance Schedule.

(k) Where the aeroplane is converted from an agricultural overload role to a passenger-carrying role, such inspections, in addition to those prescribed in the Approved Maintenance Schedule (e.g. LAMS), as shall be agreed by the CAA shall be carried out before the aeroplane is operated for the carriage of passengers.

(l) All prescribed aeroplane and engine limitations, other than those specifically varied in accordance with (a) to (j), shall remain in force.

(m) Appropriate amendments to the Manual(s) associated with the Certificate of Airworthiness (e.g. Flight Manual) shall be promulgated.

5 Application may also be made for an increase in MTWA for non-agricultural aerial application operations. Approval may be given subject to the foregoing conditions and limitations, provided that the risk to third parties is no greater than in a typical agricultural case.

6 CANCELLATION This Notice cancels Airworthiness Notice No. 90, Issue 1, dated 1 April 1983, which should be destroyed.
Cargo Containment

1 APPLICABILITY This Notice is applicable to the approval of containers used in aircraft for the transportation of cargo, in which the securing of the cargo to the aircraft structure is dependent upon the strength of the container.

2 INTRODUCTION

2.1 In view of the increase in the carriage of livestock, CAA has reviewed the means of restraint being used for this and other cargo and the ways in which compliance has been established with BCAR Section D, Chapter D4-3, paragraph 2, JAR 23.787, JAR 25.787, JAR 27.787, JAR 29.787, Section K, Chapter K4-3, paragraph 2 or Section G, Chapter G-3, paragraph 3, as appropriate.

2.2 The appropriate JAR and BCAR require that cargo compartments and the means provided for the restraint of the cargo shall have sufficient strength to restrain the cargo under flight and ground conditions to prescribed acceleration factors. In addition, unless the compartment and cargo are so located that in the event of the cargo breaking loose in emergency alighting conditions it is unlikely to cause injury to the occupants of the aircraft, damage fuel tanks or lines, or to nullify any of the escape facilities, the compartment and the means provided for restraint of the cargo shall also comply with the emergency alighting conditions of JAR 23.561, JAR 25.561, JAR 27.561, JAR 29.561, BCAR Chapter D3-8, Chapter K3-8 or Chapter G3-8 as appropriate.

2.3 A survey of containers (such as pens and horseboxes) show that usually the restraint of the animals depends on the containers themselves and that these are not always of adequate design and construction to enable the requirements to be met.

3 REQUIREMENTS

3.1 Containers, whether built into the aircraft or as self-contained units intended for transfer from one aircraft to another, shall comply with (a) or (b) as appropriate:

(a) With effect from 30th June, 1982, all newly manufactured containers and their means of installation into aircraft shall comply with the appropriate strength requirements of the appropriate JAR or BCAR for either:

(i) the flight, ground and emergency alighting loads;

or

(ii) the flight and ground loads,

depending on their intended location in the aircraft, and shall be approved by the CAA.

NOTE: Containers which comply with the requirements of the National Air Safety Specification NAS 3610, Revision 6 will be accepted as being in compliance with JAR/BCAR but only for installation in those locations where compliance with the emergency alighting conditions is not required.

(b) With effect from 1st January, 1984, all containers and their means of installation shall be approved as in (a) above by CAA.

3.2 Operators shall make adequate provision for care and maintenance of containers under their control and shall, where appropriate, formulate and adopt procedures for ensuring that containers to be used on their aircraft are of an approved type and in an acceptable.
condition. These procedures will be examined by the CAA as part of the assessment of operators maintenance procedures for the issue or variation of an Air Operator’s Certificate.

3.3 Organisations responsible for the design of a container and its installation shall provide adequate instructions for its assembly, installation and maintenance. These instructions shall be included in the operator’s loading manual or similar document.

4 PROCEDURE

4.1 When a container is designed for use only in a particular type of aircraft, it and its installation will be considered to be a modification to the aircraft. The approval procedure shall be in accordance with the modification approval procedures of BCAR Sections A or B, Chapter A/B2-5, or JAR-21 Subpart E or Sub-subpart N-E, as appropriate.

4.2 A container designed for use on various types of aircraft will be considered as an accessory. The approval procedure shall be in accordance with the Accessory Approval procedure of BCAR Sections A or B, Chapter A/B4-8, as appropriate or JAR-21 Subpart K or Sub-subpart N-K, as appropriate.

The manner of installation into any particular aircraft will need to be certificated as being in compliance with the appropriate requirements and with the associated Declaration of Design and Performance, under the Modification Approval procedure of BCAR Sections A or B, Chapter A/B2-5, or JAR-21 Subpart E or Sub-subpart N-E, as appropriate.

NOTE: A container produced in compliance with JAR-TSO C90c or FAA TSO C90c (FAR 37.199) will be accepted on the basis of having been manufactured to procedures equivalent to those referenced in paragraph 4.2.

5 ADDITIONAL INFORMATION

5.1 CAA approval will be limited to the airworthiness features of the container with regard to the aircraft, flight crew and other persons present on the flight. It will not cover the safeguarding of the cargo or, in the case of livestock, its welfare.

5.2 It is recommended that containers should be sufficiently robust and simple that assembly and/or installation into the aircraft would not constitute work necessitating the signing of a Certificate of Release to Service.

5.3 It is strongly recommended that, in view of the mishandling to which such equipment may be subjected, the instructions provided in accordance with paragraph 3.3 should also contain advice as regards tolerable damage and any resulting load limitations.

5.4 Operators are reminded that they are responsible for safeguarding the aircraft structure and equipment against the effects of corrosive liquids and any other materials which could cause damage or malfunction.

5.5 Where restraint of the cargo and container is provided by approved nets, bulkheads, etc. and no reliance is placed on the strength of the container, then such containers will not be subject to the above requirements.

6 CANCELLATION This Notice cancels Airworthiness Notice No. 92, Issue 3 dated 22 March 2002, which should be destroyed.
Tyres And Wheels Fitted To Aircraft Certificated In The Transport Category

1 INTRODUCTION  Airworthiness Notice No. 5 and CAAIP Leaflet 11-22, Appendix 32-2, contain information in respect of tyre maintenance, reliability and wear limitations.

2 Tyre failures on large transport aircraft, particularly wide-body types, have resulted in serious incidents and accidents. The principal problem is that when one tyre fails, its axle companion becomes overloaded, and sometimes fails almost immediately.

3 In some cases extensive damage, including fire, has resulted from tyre and wheel degradation and there has been an attendant reduction in braking performance.

4 Considerable effort is being expended in both the UK and the USA to investigate these failures in order to understand their causes with the object of evolving effective requirement standards and measures necessary to minimise the hazards. However, in the meantime, the rate of serious occurrences is such as to justify interim action to reduce the current hazard.

5 The FAA has introduced amendments to FAR Parts 25 and, under FAR Part 21, to TSO C62d which require improved standards for tyres, and to TSO C26c which requires improved standards for wheels. The parts of these amendments now considered to be necessary for action in respect of UK registered aircraft are stated in paragraph 6 of this Notice.

6 REQUIREMENT
With effect from 31st December, 1980, the following standards, or their approved equivalent, will be used as the acceptable level for approval of new designs of equipment intended for fitment to UK registered aircraft:-

(a) Tyres – TSO C62d, except for paragraph (e) i.e. tyre designs approved prior to 31st December, 1980, may continue to be manufactured.

(b) Wheels – TSO C26c (but omitting the roll-on-rim test of paragraph 4.1(c)(3), other than for new designs of wheel intended for aircraft certificated to BCAR Section D, FAR 25 or JAR-25, for which the roll-on-rim test of paragraph 4.1(c)(3) is effective from 31 December 1982).

NOTE: JAR TSO C26C Wheels and Wheel Brake Assemblies is only applicable for use on JAR-23, JAR-27 and JAR-29 aircraft.

7 In addition, from 31st December, 1982, Douglas DC10, Lockheed 1011 and Boeing 747 aircraft on the UK register must be equipped only with high speed mainwheel tyres (rated above 160 mph) complying with standards equivalent to TSO C62c and FAR 25.733 as at Amendment 25-49. These tyres shall be maintained in service at inflation pressure levels which, at each operating load, will preserve the appropriate load reserve factor of FAR 25.733 as at Amendment 25-49, and the aircraft shall be fitted with wheels which are declared by the aircraft constructor to be compatible with these tyre inflation pressure levels.
8 ADDITIONAL INFORMATION

A study of service experience indicates that new models of main wheels which satisfy the roll-on-rim test of TSO C26c for JAR Part 25, FAR Part 25 and BCAR Section D applications could alleviate the secondary effects of tyre failures, therefore paragraph 6 has been revised accordingly to embrace this type of test requirement. It has also been concluded that service experience does not warrant retrospective fitment of TSO C62c tyres for aircraft types other than those included in paragraph 7 of this Notice.

9 CANCELLATION

This Notice cancels Airworthiness Notice No. 93, Issue 4, dated 29 October 2001, which should be destroyed.
Personnel Certification For Non-Destructive Testing Of Aircraft, Engines, Components And Materials

1 GENERAL

1.1 This Notice advises the Authority’s requirements for the qualification of Non-Destructive Testing (NDT) personnel, which shall be in accordance with European Standards EN473 (NOTE 1) or EN4179 (NOTE 2), and the Approved Organisation’s written practice/procedures for the authorisation of NDT personnel.

1.2 This revision of the Notice clarifies CAA policy relating to the acceptability of organisation-based schemes for the qualification of NDT personnel in accordance with European NDT personnel requirements, and is intended to recognise the competence of Level 3 qualified personnel.

1.3 The term NDT is used throughout this Notice to include, but not be limited to, liquid penetrant, magnetic particle, eddy current, ultrasonic, radiographic and other recognised methods as identified in the above referenced standards and shall be applicable to all NDT methods used by Approved Organisations. Other methods and their associated procedures will be subject to approval by the Authority under the applicable airworthiness approval standard (JAR-21, JAR-145, BCAR etc.). Definitions of other key terms used throughout this Notice are contained in Section 9.

NOTE: (1) EN473 – General Principle for Qualification and Certification of NDT Personnel.
NOTE: (2) EN4179 – Qualification and approval of personnel for non-destructive testing.
NOTE: (3) All references to Standards within this Notice are to be taken as referring to the latest issue and are available from the British Standards Institute, 389 Chiswick High Road, London, W4 4AL.

2 PROCEDURES FOR THE QUALIFICATION OF NDT PERSONNEL

2.1 All Approved Organisations involved in any aspect of NDT shall develop and maintain procedures for the qualification and authorisation of their NDT personnel in accordance with either EN473 for a central Personnel Certification scheme (see Section 2.2) or EN4179 for an organisation-based Personnel Certification scheme. In either case, the organisation’s procedures and/or written practice as defined by EN4179 shall be approved by the Nominated Level 3 (see Section 3).

2.2 Within the UK, the CAA currently recognises the national scheme for Personnel Certification in Non-Destructive Testing (PCN) administered by the British Institute of Non-Destructive Testing as meeting the requirements of EN473.

3 QUALIFIED STAFF

3.1 CAA Approved Organisations undertaking NDT in accordance with BCAR or JAR must satisfy the CAA that they have adequate numbers of suitably qualified staff to discharge the responsibilities of the approval.

3.2 Organisations shall nominate in writing, supported with evidence of certification, an individual responsible to the Chief Executive/Accountable Manager, for the technical supervision of NDT. This individual will hold independent central certification at Level 3 in the appropriate Industry Sector and will be referred to as the Nominated Level 3.
position shall be identified within the Organisation Exposition, and any change in this position advised to the Authority.

3.3 The Authority recognises PCN Level 3 certified personnel under EN473 and independently centrally certified American Society for Non-Destructive Testing (ASNT) Level 3 personnel (including ACCP) suitably experienced in aerospace under EN4179, as qualified for the position of Nominated Level 3.

3.4 Where the Nominated Level 3 is not qualified in all methods used by the Organisation, then the additional Level 3s necessary to provide coverage shall be independently centrally certified.

3.5 Additional Level 3 Certification holders shall be listed in the Organisation Exposition or reference made in the Exposition to other documents containing the list of Level 3 holders. Any changes to this list are to be notified to the Authority through appropriate amendments.

3.6 The Authority may accept persons external to the Organisation as the Nominated Level 3, provided written agreement exists between the individual and the Organisation setting out the individual’s responsibilities within the Organisation.

4 INSPECTIONS AND CERTIFICATION OF INSPECTIONS

4.1 NDT inspections shall be carried out by personnel approved in accordance with the Organisation’s written practice. Where NDT procedures are specified by the organisation responsible for the design and/or manufacture of the aircraft, material, structure or component, then these must be used, except where change is permitted and authorised as defined in paragraph 5 of this Notice. Where non-mandatory inspections are to be undertaken, for which the responsible design/manufacturing organisation has not specified NDT procedures, then the NDT method, technique, procedure and instruction shall be prepared in accordance with paragraph 5 of this Notice and approved by a Level 3 holder qualified in the applicable method.

4.2 Normally, certification of inspections will be made by persons who hold Level 2 or above authorisations. However, where an inspection task is determined by the Nominated Level 3 to have clearly defined acceptability and rejection criteria requiring no interpretation, then certification may be carried out by an authorised Level 1, as detailed within the written practice.

4.3 Where a Level 3 is required to carry out and certify an NDT inspection then this person must either hold current Level 2 certification in those methods, or be able to provide evidence that they have successfully completed an appropriate Level 2 practical examination and maintained continuity in the application of practical testing as defined in the referenced standards and detailed in the written practice.

5 NDT TECHNIQUES AND INSTRUCTIONS AND THEIR APPROVAL

5.1 NDT techniques, procedures and instructions, published and specified by the Type Certificate holder in NDT Manuals, Service Bulletins, Approved Drawings etc. constitute airworthiness data.

5.2 Where the airworthiness data published by the Type Certificate holder permits changes (e.g. selection of equipment model, probe type etc.) then such changes must be authorised in writing by a Level 3 qualified in the appropriate method.

5.3 Any other change requires the written agreement of the Type Certificate holder responsible for the design of the product/structure before such a change is implemented.

5.4 NDT Instructions prepared by a Level 2 holder shall be approved by a Level 3 holder qualified in the applicable method.

5.5 The procedure for the control of all NDT techniques, procedures and instructions, including their preparation and authorisation within any CAA Approved Organisation, shall be detailed in the Organisation’s approved Quality Procedures.
6 SUPPLIERS AND SUB-CONTRACTORS TO APPROVED ORGANISATIONS

An Organisation utilising suppliers and sub-contractors where NDT processes are employed, shall detail within their written practice how the Organisation ensures that training and approval of NDT personnel in such suppliers or sub-contractors is controlled. Organisations are referred to BCAR A8-1 Appendix 2 ‘Surveillance of Sub-Contractors’, JAR21.139 (a), JAR145.75 and associated ACJ material.

7 TRANSITIONAL ARRANGEMENTS

7.1 Approvals based on the previously accepted NDT qualifications below will remain acceptable to the Authority for a period of 24 months following publication of Issue 7 of this Notice.

(a) ARB/CAA letter of Authorisation,
(b) an AQD Confirmatory letter,
(c) personnel and organisational approvals under MILSTD-410E.

7.2 Organisations operating in accordance with Issue 6 of this Notice have a period of 24 months from the date of publication of Issue 7 of this Notice to comply with these requirements.

8 OTHER MEANS OF COMPLIANCE

NOTE: Personnel holding a current UK Aircraft Maintenance Engineer’s Licence may continue to undertake inspections as limited by Airworthiness Notice No. 3, paragraph 1.7(a).

For Organisations seeking CAA approval, the Authority is prepared to consider two other methods of complying with this Notice:

(a) Organisations within the Joint Aviation Authorities The CAA will accept an NAA approval under EN473 or EN4179 issued by full member states of the Joint Aviation Authorities, provided that the Organisation concerned can demonstrate compliance with paragraph 3 of this Notice.

(b) Organisations outside the Joint Aviation Authorities For Organisations located outside the JAA full member states, the CAA may consider local national qualifications alternative to EN473 and EN4179 provided that they are demonstrated to be equivalent, have the approval of the local airworthiness regulating authority, and the Authority is satisfied that no degradation of airworthiness standards is likely to occur as a result of the acceptance of such alternative arrangements.

9 DEFINITIONS

Authorisation (of NDT procedures): The act of signifying approval of NDT procedures by a Nominated Level 3.

Authorisation (of NDT personnel): A written statement issued by a Nominated Level 3 based on the individual’s competence as specified within the certificate.

Certificate: Document issued under the rules of either of the certification systems defined in this Notice (EN473 or EN4179) indicating that adequate confidence is provided, that the named person is competent to perform specified non-destructive testing.

Industry Sector: A particular section of industry or technology where specialised NDT practices are used requiring specific product related knowledge, skill, equipment or training. An industrial sector may be interpreted to mean a product (welds, castings, ....) or an industry (aerospace, petrochemical ....).

NDT Technique: A specific way of utilising an NDT method (e.g. ultrasonic immersion technique).

NDT Procedure: A written description of all essential parameters and precautions to be observed when applying an NDT technique to a specific test, following an established standard, code or specification.
**NDT Instruction**: A written description of the precise steps to be followed in testing to an established standard, code, specification or NDT procedure.

**NDT Method**: Discipline applying a physical principle in Non-Destructive Testing (e.g. ultrasonic method).

**Nominated Level 3**: An independently certified Level 3 certificate holder responsible to the Chief Executive or Accountable Manager for the airworthiness aspects of NDT work undertaken by that Organisation.

**Qualification**: The proven ability of NDT personnel to meet the requirements of a given specification in terms of physical requirements, training, knowledge and experience necessary to perform the applicable NDT method.

**Qualification Examination**: An examination administered by an independent certifying body (e.g. PCN), or by a body authorised within the employer’s EN4179 compliant written practice, which demonstrates the general, specific and practical knowledge of the candidate.

**Type Certificate**: For the purposes of this Airworthiness Notice, Type Certificate includes Type Certificates, Supplementary Type Certificates, Joint Parts Approval (JPA) Authorisations or Joint Technical Standard Orders (JTSO) Authorisations.

**10 CANCELLATION** This Notice cancels Airworthiness Notice No. 94 Issue 6, dated 12 November 1990, which should be destroyed.
Use Of High Intensity Ultra-Violet Lamps In Fluorescent Penetrant And Magnetic Particle Inspections

1 INTRODUCTION

1.1 The CAA has been advised that the condition of some high intensity 125 watt ultra-violet self filtered lamps used for fluorescent penetrant and magnetic particle inspections may be unreliable due to the emission of excessive amounts of white light which could compromise reliability of the process to find small defects.

1.2 As soon as practicable following the receipt of this Notice all high intensity 125 watt ultra-violet self filtered lamps are required to be tested for excessive white light emission before use and any lamp failing this test is to be rejected.

1.3 These ultra-violet lamps must also be periodically tested for excessive white light emission and any lamp failing this test shall be rejected.

1.4 A mercury vapour lamp incorporating a woods glass filter which will obviate this problem is available through normal suppliers of ultra-violet lamps.

2 A SUITABLE TEST METHOD TO DETERMINE THE ACCEPTABILITY OF HIGH INTENSITY 125 WATT ULTRA-VIOLET LAMPS FOR FLUORESCENT PENETRANT AND MAGNETIC PARTICLE INSPECTION WITH RESPECT TO WHITE LIGHT EMISSION

2.1 The test involves quantitative analysis using a white light meter calibrated to a National Standard.

2.2 It is mandatory to perform this test prior to using any such lamp for inspection purposes. This test must also be applied to lamps periodically throughout their service life.

2.3 Lamps which show evidence of having been painted shall not be used for inspection purposes.

2.4 The test must be performed in a darkened area with ambient background light levels not greater than 2 foot candles.

2.5 The test must be performed at a minimum ultra-violet intensity of 1200 µW/cm² (1.2 mW/cm²).

3 EQUIPMENT

3.1 One of the following white light meters calibrated to a National Standard.

(a) Ardrox DLM 1000
(b) Minolta T1
(c) Spectronics DSE IOOX. (Ely Chemical Co.)
(d) Ardrox BC1955 – to BS667/4489
(e) Levy Hill Mk. V to BS667/4489
(f) Levy Hill Mk. VI to BS667/4489
(g) Elyscan 2 (Ely Chemical Co.)

3.2 Ultra-violet Radiometer calibrated to a National Standard.
4 TEST PROCEDURE

NOTE: It is necessary that the reflector is new or highly polished to ensure that the maximum white light reading is obtained for each lamp.

4.1 Using the white light meter in the test position measure the ambient light level and record.

4.2 Switch on the lamp to be tested ensuring it is in a suitable reflector and allow sufficient warm-up period (minimum 20 minutes).

4.3 Set up the lamp housing in order that the meter head is perpendicular to the lamp, and adjust the distance away from the tip of the self filtered lamp to give an ultra-violet intensity of 1200 µW/cm² maximum using the ultra-violet Radiometer. If this is not practical (due to fixed lamps etc.) then position the ultra-violet Radiometer to obtain the most intense ultra-violet output at a convenient distance and record the value in µW/cm².

4.4 Position the white light meter to the most intense white light area as indicated, retaining the distance set in paragraph 4.3. Record the value.

4.5 Subtract the ambient white light measurement obtained in paragraph 4.1, from the white light measurement obtained from the lamp in paragraph 4.4. Record the value.

5 ACCEPTANCE STANDARD

5.1 At an ultra-violet intensity of 1200 µW/cm², the maximum acceptable white light intensity limit varies depending on the meter used. Values for approved meters are given below:

(a) Ardrox DLM 1000 8 foot candles
(b) Minolta T1 0.3 foot candles
(c) Spectronics DSE IOOX. (Ely Chemical Co.) 2 foot candles
(d) Ardrox BC1955 0.9 foot candles
(e) Levy Hill Mk. V 0.9 foot candles
(f) Levy Hill Mk. VI 0.9 foot candles
(g) Elyscan 2 (Ely Chemical Co.) 0.9 foot candles

5.2 At any other ultra-violet intensity then the maximum acceptable white light intensity limit must be calculated from the formula:

White light intensity shall be less than \((Y\times Z)/1200\) foot candles

where \(Y\) = maximum ultra-violet light recorded in µW/cm².

\(Z\) = acceptance limit for white light at a measured ultra-violet intensity of 1200 µW/cm² for the specific meter used from reference table in paragraph 5.1.

5.3 Any lamp having a white light output greater than the limit shall not be used for inspection purposes.

6 IDENTIFICATION

6.1 All lamps tested and accepted shall be identified in accordance with a local procedure.

NOTE: (1) One foot candle = 10.76 lux.

NOTE: (2) White light photometers are calibrated to a National Standard using Tungsten Filament lamps. The spectral output of an ultra-violet lamp is significantly different to that of a Tungsten Filament, and therefore the calibration is not valid. The major source of discrepancy in this case, will be due to emission of shorter wavelength light.

7 CANCELLATION

This Notice cancels Airworthiness Notice No. 95, Issue 3, dated 30 September 1996, which should be destroyed.
Disposition Of Scrap Aircraft Parts & Materials

1 PURPOSE   The purpose of this Airworthiness Notice is to provide information and guidance to persons involved in the maintenance, sale, or disposal of aircraft parts. It provides information and guidance to prevent scrap aircraft parts and materials from being sold or acquired as serviceable parts and materials.

2 INTRODUCTION   It is common practice for owners of aircraft parts to dispose of scrap parts and materials by selling, discarding, or transferring such items. In some instances, these items have reappeared for sale in the active parts inventories of the aviation community. Misrepresentation of the status of parts and material and the practice of making such items appear serviceable could result in the use of non conforming parts and materials.

3 TYPES OF PARTS AND MATERIALS THAT MAY BE MISREPRESENTED
Persons disposing of scrap aircraft parts and materials should consider the possibility of such parts and materials being misrepresented and sold as serviceable at a later date. Caution should be exercised to ensure that the following types of parts and materials are disposed of in a controlled manner that does not allow them to be returned to service:

3.1 Parts with non-repairable defects, whether visible or not to the naked eye.
3.2 Parts that are not within the specifications set forth by the approved design, and cannot be brought into conformance with applicable specifications.
3.3 Parts and materials for which further processing or rework cannot make them eligible for certification under a recognised released system.
3.4 Parts subjected to unacceptable modification or rework that is irreversible.
3.5 Life-limited parts that have reached or exceeded their life limits, or have missing or incomplete records.
3.6 Parts that cannot be returned to an airworthy condition due to exposure to extreme forces or heat. (See Airworthiness Notice No. 97.)
3.7 Principal Structural Elements (PSE) removed from a high-cycle aircraft for which conformity cannot be accomplished by complying with the mandatory requirements applicable to ageing aircraft.

4 METHODS TO PREVENT MISREPRESENTATION OF SCRAP PARTS AND MATERIALS
Persons disposing of scrap aircraft parts and materials should, when appropriate, mutilate those parts and materials prior to release. Mutilation should be accomplished in such a manner that the parts become unusable for their original intended use, nor should they be able to be reworked or camouflaged to provide the appearance of being serviceable, such as by re-plating, shortening and re-threading long bolts, welding, straightening, machining, cleaning, polishing, or repainting.

4.1 Mutilation may be accomplished by one or a combination of the following procedures, but is not limited to:
(a) Grinding;
(b) Burning;
(c) Removal of a major lug or other integral feature;
(d) Permanent distortion of parts;
(e) Cutting a hole with cutting torch or saw;
(f) Melting;
(g) Sawing into many small pieces.

4.1.2 The following procedures are examples of mutilation that are often less successful because they may not be consistently effective:-
(a) Stamping (such as a stamped ‘R’ on a part);
(b) Spraying with paint;
(c) Hammer marks;
(d) Identification by tag or markings;
(e) Drilling small holes;
(f) Sawing into two pieces. Persons who rework scrap parts and materials may be skilled technicians and attempt to restore parts cut in two pieces in such a manner that the mutilation proves difficult to detect.

4.2 Persons disposing of scrap aircraft parts and materials for legitimate non-flight uses, such as training and education aids, research and development, or for non-aviation applications. In such instances, mutilation is not appropriate and the following methods should be used to prevent misrepresentation:-

4.2.1 Permanently marking or stamping the parts, subparts, and material as ‘NOT SERVICEABLE’. (Ink stamping is not an acceptable method);
4.2.2 Removing original part number identification;
4.2.3 Removing data plate identification;
4.2.4 Maintaining a tracking or accountability system, by serial number or other individualised data, to record transferred scrap aircraft parts and materials; and
4.2.5 Including written instructions concerning disposition and disposal of such parts and materials.

NOTE: Scrap or expired life-limited parts and materials should not be passed on to any person or organisation who may end up placing the parts and materials back in actual use, due to the criticality of parts and material failure and the potential safety threat.

4.3 Organisations handling scrap or expired life-limited aircraft parts and materials should establish a quarantine store area in which to segregate such items from active serviceable inventories and to prevent unauthorised access. Caution should be exercised to ensure that these parts and materials receive the disposition specified in this Notice.

4.4 Manufacturers producing approved aircraft parts should consider maintaining records of serial numbers for ‘retired’ life-limited or other critical parts. In such cases, the owner who mutilates applicable parts is encouraged to provide the original manufacturer with the data plate and/or serial number and final disposition of the part.

5 METHOD TO IDENTIFY MISREPRESENTED PARTS

All purchasers of aircraft parts and materials should ensure that misrepresented scrap parts and materials are not received into active inventory. The following are examples of conditions to be alert for when receiving parts:-

5.1 Parts showing signs of rework which were purchased as ‘new’.
5.2 Used parts showing signs of unapproved or inappropriate repair.
5.3 Parts with poor workmanship or signs of rework in the area of the part data plate, number or serial number inscription.
5.4 Used parts lacking verifiable documentation of history and approval.
5.5 Parts with prices ‘too good to be true’.
5.6 Questionable part numbers, fraudulent or suspicious Technical Standard Order or FAA-Parts Manufacturer Approval markings and/or re-identification, stamp-overs or vibro-etching on the data plate.

5.7 Parts delivered with photocopied or missing JAA Form 1 or other acceptable maintenance release documentation.

5.8 Parts with a finish that is inconsistent with industry standards (e.g. discoloration, inconsistencies, resurfacing)

5.9 Parts purchased as new but with release documentation reflecting a status other than new.

5.10 Parts with poor documentation exhibiting incomplete or inconsistent part identity information.

5.11 Intact 'scrap' unsalvageable parts offered in bulk weight for prices higher than for mutilated parts with identical weight and content.

NOTE: Suspected Unapproved Parts Notification can be found on FAA Internet address: http://www.faa.gov/avr/sups.htm and Special Airworthiness Information Bulletins can be found on FAA Internet address: http://av-info.faa.gov

An approved organisation or LAME who receives suspect parts should report to the CAA as detailed in paragraph 5 of Airworthiness Notice No. 19.

6 CANCELLATION This Notice cancels Airworthiness Notice No. 96, issue 1, dated 7 November 1995, which should be destroyed.
Return To Service Of Aircraft Items Recovered From Aircraft Involved In Accidents/Incidents

NOTE: For the purpose of this Notice the term 'items' includes all components, parts, engines and accessories.

1 INTRODUCTION

1.1 This Notice reviews the factors involved in establishing the acceptability of aircraft items recovered from aircraft involved in accidents/incidents, and states the conditions to be met before such items may be returned to service.

1.2 The Civil Aviation Authority has evidence that some aircraft items, (including highly stressed rotating parts) have been released to service after having been recovered from aircraft involved in accidents/incidents even though the accident circumstances may have caused damage or changed characteristics from those of the type design. Since such items may not manifest any visual evidence of damage, distortion or changed characteristics, a serious airworthiness hazard could result from their use without special precautions being taken as detailed in this Notice.

NOTE: The subject of this Notice was first promulgated to industry by a CAA Letter to Operators Number 461 (revised to LTO 461/A on the 18 December 1981), following informal consultation with industry and with aviation insurers.

2 ESTABLISHING ORIGIN OF RECOVERED ITEMS

2.1 When an aircraft has been involved in an accident/incident, the title to the salvage may pass from the insured owner to other persons (e.g. aircraft insurers) and this salvage may be offered for sale either complete or as separate aircraft items in an 'as is - where is' condition. While some items may be totally unaffected by the accident/incident which caused the aircraft to be declared as salvage, it is essential to obtain clear evidence that this is the case. If such evidence cannot be obtained, the item may not be returned to service.

2.2 All such items must therefore be subject to competent assessment and inspection in the light of adequate knowledge of the circumstances of the accident, subsequent storage and transport conditions, and with evidence of previous operational history obtained from valid airworthiness records, before overhaul and re-installation can be considered.

2.3 In particular, if a crash load is sufficient to take any part above its proof strength, residual strains may remain which could reduce the effective strength of the item or otherwise impair its functioning. Loads higher than this may of course crack the item, with an even more dangerous potential. Further, a reduction in strength may be caused by virtue of the change of a material’s characteristics following overheat from a fire. It is therefore of the utmost importance to establish that the item is neither cracked, distorted or overheated. The degree of distortion may be difficult to assess if the precise original dimensions are not known, in which case there is no option but to reject the item. Any suggestion of overheating would be cause for a laboratory investigation into significant change of material properties.

2.4 The standard procedures appropriate to items removed for overhaul following normal service life may not therefore be sufficient for items from salvaged aircraft. If the
information in the Manufacturer’s Manual, or other technical publications, is insufficient to
deal with the considerations detailed above then the manufacturer must be consulted for
guidance. If the manufacturer provides the additional information, and the item can be
shown to meet this, then it may be returned to service.

2.5 Where a difficulty exists in classifying the airworthiness significance of an aircraft item
recovered after an accident/incident, the question should be referred to the CAA Operating
Standards Division, Maintenance Requirements and Policy Section, for advice. The CAA
will require full details of the circumstances of the accident/incident before a response is
made to the enquiry.

3 INFORMATION OBTAINED FROM AVIATION INSURERS

3.1 Aviation insurers and other persons who obtain title to salvage parts may supply to salvage
purchasers the details of the accident/incident leading to the aircraft, or aircraft item, being
declared as salvage. It is also common practice for aviation insurers to pass over the
airworthiness records to the salvage purchaser. Whilst such information and records are
an essential part of the assessment, where return to service is being considered, they are
not a guarantee that the item is acceptable for re-installation.

3.2 Some aviation insurers have agreed to co-operate with the CAA’s attempt to prevent items
being returned to service if their airworthiness cannot be confidently confirmed. They have
agreed to supply details of the occurrence, and to identify the party to whom the salvage
has been sold, to the Operating Standards Division, Application and Certification Section.
This information may be relevant when CAA advice is sought under paragraph 2.5 of this
Notice, but does not excuse the enquirer from furnishing the information required by that
paragraph.

4 SUPPLEMENTARY INFORMATION

Attention is drawn to Airworthiness Notices Nos. 11 and 19 which also deal with the
safeguards necessary for users obtaining aircraft parts in the open market, particularly in
relation to the release documentation and evidence of previous history.

5 CANCELLATION

This Notice cancels Airworthiness Notice No. 97, Issue 1, dated 10 May 1982, which
should be destroyed.
Use Of Motor Gasoline (MOGAS) In Certain Light Aircraft

1 INTRODUCTION

Because of the growing difficulties experienced in obtaining Aviation Gasoline (Avgas), particularly in small quantities, and the ready availability of Motor Gasoline (MOGAS), CAA were asked to consider permitting the use of motor gasoline in general aviation aircraft. It has been agreed to permit the use of MOGAS in certain single-engined aircraft using low compression ratio unsupercharged engines. (See Appendix, Schedule 1). In such aircraft any adverse effects of using MOGAS are likely to be minimal and, if present, are likely to become apparent over a sufficiently long period to enable them to be controlled satisfactorily by normal maintenance procedures. Accordingly, the CAA has issued an Exemption, in the terms set out in the Appendix to this Notice, from compliance with the fuel specifications and associated limitations set out in the Official Manuals forming part of the Certificate of Airworthiness. CAA will give consideration to individual applications in respect of aircraft not listed in the Schedule. (See paragraph 2.3). Fuel obtained direct from a filling station forecourt may be acceptable in accordance with the provisions of Airworthiness Notice No. 98A.

CAUTION: BS 7070 (unleaded) MOGAS or MOGAS of any standard other than BS 4040 is not permitted by either this Notice No. 98 or Airworthiness Notice No. 98A.

2 GENERAL

2.1 It should be noted that although CAA is satisfied that the listed aircraft/engines may be operated with adequate safety on MOGAS, provided the limitations* are observed, CAA takes no responsibility for infringement of manufacturer’s warranty, accelerated deterioration of the engine or airframe components, or any other long term deleterious effects.

NOTE: * With regard to the limitation on fuel temperature, it may be assumed that the temperature of the fuel in the tank prior to the commencement of the flight is less than 20°C unless the ambient temperature has been in excess of this temperature for some hours, or the aircraft has been standing in continuous direct sunshine.

2.2 Because of likely differences between MOGAS and AVGAS, the following precautions are to be taken:

(a) Use only freshly obtained supplies; avoid long storage in the aircraft fuel tank.
(b) If the aircraft has been standing for 24 hours or longer, check fuel for water.
(c) As carburettor icing is more likely when using MOGAS, particular attention should be paid to the use of carburettor hot air. This should include:
   – making sure, during the pre-take-off checks, that a good RPM drop is obtained when hot air is selected,
   – intermittent selection of hot air in flight whether or not the symptoms of loss of power are experienced.
(d) In the course of the daily check and other routine inspections, pay particular attention to non-metallic fuel pipes and seals for signs of leaks or deterioration.
(e) After any prolonged period of heat soak at low fuel flow (e.g. hot day ground idling) establish the ability to maintain full power before commencing a take-off.

2.3 Applications (which must be with the owner’s written consent) for use of MOGAS in aircraft not listed in the Appendix, Schedule 1, should be made to CAA, Safety Regulation Group, Aviation House, Gatwick. The CAA will need to be satisfied on the following aspects. The applicant should either provide authenticated information substantiating compliance or apply for a Major Modification for which the appropriate charges will be made.

(a) The engine should have been either type certificated for operation with minimum grade fuel of 80 MON or less, or test evidence should be provided establishing that the engine has an adequate margin from detonation under the most adverse operating conditions.

(b) There should either be positive pressure throughout the fuel system under all normal operating conditions, or testing of the system should be carried out to a schedule agreed by the CAA, to show freedom from vapour locks.

(c) Non-metallic pipes, seals, etc., in the fuel system should be unlikely to be seriously affected by MOGAS.

**NOTE:** Where composite materials, e.g. fibre glass, are used in the construction of fuel tanks, the CAA will require evidence that these materials are compatible with MOGAS.

(d) There should be no doubts regarding the efficacy of the protection against carburettor icing.

(e) Any specific prohibition of the use of MOGAS in the aeroplane or engine manuals should be brought to the attention of the CAA, together with a copy of the relevant page of the manual.

3 **RECORDING USE OF MOGAS** All operating times with fuel containing 25% or more of MOGAS must be recorded in the airframe log book, and block records must be transferred at appropriate intervals into the engine log book(s).

4 **CANCELLATION** This Notice cancels Airworthiness Notice No. 98, Issue 11, dated 17 March 1992, which should be destroyed.

1 The Civil Aviation Authority, in exercise of its powers under Article 116 of the Air Navigation Order 1995, hereby exempts the aircraft set out in Schedule 1 hereto, with engines as listed therein, from the provisions of Article 8(1) of the said Order to the extent necessary to enable it to fly using four star Motor Gasoline to BSI specification BS 4040 : 1988. Unless it is known, on a particular flight that the proportion of Motor Gasoline in the aircraft’s fuel is less than 25%, the aircraft shall be deemed for the purpose of this Exemption to be using Motor Gasoline.

2 This Exemption is subject to the following conditions:
   (a) No Motor Gasoline fuel shall be used for flight unless it has been proven to comply with BS 4040 : 1988 and Schedule 2 of this Notice No 98.
   (b) No flight shall be made pursuant to this Exemption unless either:
      (i) the temperature of the fuel in the tank prior to the commencement of the flight may reasonably be assumed to be less than 20°C and the aircraft is flown below a pressure altitude of 6000 ft, or
      (ii) the written permission of the CAA has been obtained to operate to different limitations and that the terms of the permission are complied with.
   (c) No flight shall be made pursuant to this Exemption unless the limitations pursuant to sub-paragraph (b) above due to the use of Motor Gasoline are set out on a placard which is affixed in a conspicuous position in the flight crew compartment of the aircraft.
   (d) In respect of every flight pursuant to this Exemption, there shall be endorsed in the aircraft log book maintained in respect of the aircraft, a statement that the flight was undertaken pursuant to this Exemption. Block records must be transferred to the engine log book at appropriate intervals.

3 The Exemption dated 16 March 1995 is hereby revoked.

4 This Exemption shall have effect from the date hereof until revoked.

Signed for the Civil Aviation Authority Dated 21 July 1995
The following aircraft may use four star Motor Gasoline to BSI specification BS 4040 : 1988 in accordance with Airworthiness Notice No. 98.

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Cessna 172P . . . . Lycoming 0-320-D
Cessna F172E . . . . Continental 0-300-D
Cessna F172F . . . . Continental 0-300-D
Cessna F172H . . . . Continental 0-300-D
Cessna F172L . . Lycoming 0-320-E
Cessna F172M . . Lycoming 0-320 E
Cessna 175 . Continental GO-300
Cessna 177 . Lycoming 0-320-E
Cessna 180 . Continental 0-470-J or -L
Cessna 182G . Continental 0-470-R
Cessna 195 . Jacobs 755S
Chilton DW1 . Walter Mikron, Lycoming 0-145-A2
Christen A1 Husky . Lycoming 0-360-C
Coates Swalsong . Continental C90
Comper Swift CL7 . Pobjoy R, Niagara, Cateract
Colibri MB2 . VW
Cosmic Wind . Continental C90
Currie Wot . Lycoming 0-145A Walter Mikron, Pobjoy R

DH 60M, 60G, Gipsy Moth . DH, Gipsy 1, Curtis Wright Gipsy 1
DH 80A Puss Moth . Gipsy Major 1 or 1C
DH 82A (Aust) Tiger Moth . Gipsy Major 1
DH 82A . Gipsy Major 1 or 1C
DH 82A Tiger Moth . Gipsy Major 1F
DH C1 Chipmunk 21 . Gipsy Major 10 Mk 2
DH C1 Chipmunk 22 & 22A . Gipsy Major 10 Mk 2
DH C1 Chipmunk 22 (Lycoming) . Lycoming 0-360-A
DH 82A Seaplane . Gipsy Major 1
DH 83 Fox Moth . Gipsy Major 1
DH 85 Leopard Moth . Gipsy Major 1 or 1C
DH 87 Hornet Moth . Gipsy Major 1, 1C or 1F
DH Moth Minor . Gipsy Minor
DHC-2 Beaver . Pratt & Whitney R985-AN1
Druine Condor . Continental C90, 0-200A
Druine Condor D62B . Rolls-Royce 0-240-A
Druine Condor D62C . Rolls-Royce 0-240-A
Druine D5 Turbi . Walter Mikron III
Druine Turbi . VW
Druine Turbi . Continental A65, Walter Mikron II

E. A. A. Biplane . Continental C75
Eakins Airbuggy . VW
Evans VP-1 . VW
Evans VP-2 . VW, Continental A65
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<th>Aircraft</th>
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<tr>
<td>Falconair F9</td>
<td>VW</td>
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<td>Falconair F11</td>
<td>Continental 0-200A</td>
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<tr>
<td>Fokker E111 Replica</td>
<td>Continental A75</td>
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<td>Fokker DV111 Replica</td>
<td>Warner Scarab</td>
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<td>VW</td>
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<td>VW</td>
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<td>Fournier RF-5</td>
<td>Limbach 1700E</td>
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<td>Fournier RF6B-100</td>
<td>Continental 0-200 A</td>
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<td>Fournier SFS 31 Milan</td>
<td>VW</td>
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<td>Fred Series 2</td>
<td>VW</td>
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<td>Great Lakes</td>
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<td>Gulfstream GA7</td>
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<td>Hiller UH-12E</td>
<td>Lycoming V0-540-B</td>
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<td>Hughes 269A Helicopter</td>
<td>Lycoming H10-360-A</td>
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<td>Issacs Fury</td>
<td>Lycoming 0-290</td>
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<td>Issacs Spitfire</td>
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<td>Jodel D9, 92</td>
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<td>Jodel D117 117A</td>
<td>Continental C90</td>
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<td>Jodel D119</td>
<td>Continental C90</td>
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<td>Jodel D120</td>
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<td>Jodel D140A</td>
<td>Lycoming 0-360 A</td>
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<td>NOTE: * Front fuel tank must be used for take-off, initial climb and landing.</td>
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<td>Jodel 150</td>
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<td>NOTE: * Front fuel tank must be used for take-off, initial climb and landing.</td>
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<td>Jodel DR1050</td>
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<td>Jurca Tempete</td>
<td>Lycoming 0-290-D, Continental C90</td>
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<td>Jurca Sirocco</td>
<td>Lycoming 0-290 D</td>
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<td>Kittiwake 1</td>
<td>Lycoming 0-290-D, Continental 0-200A</td>
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<td>Kittiwake 2</td>
<td>Continental 0-200A</td>
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<td>KZ 8</td>
<td>Gipsy Major 1</td>
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<td>Luton Minor</td>
<td>JAP, J99, VW, Lycoming 0-145A</td>
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<td>Luton Minor 111</td>
<td>Continental 0-200A</td>
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<td>Luton Major LA5</td>
<td>Walter Mikron, Continental C90, Continental 0-200A</td>
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Manning Flanders . . . . . . . . . . . . . . Continental C75
Minicab GY20, GY201 . . . . . . . . . . Continental A65
Minicab GY30, JB-01 . . . . . . . . . . Continental C90
Midget Mustang . . . . . . . . . . . . . . Continental C85, C90
Morane N Replica . . . . . . . . . . . . . . Continental C90
Morane Saulnier MS 892A . . . . . . Lycoming 0-320-E
Morane Saulnier MS 893A . . . . . . Lycoming 0-360-A
Morane Saulnier MS 893E . . . . . . Lycoming 0-360-A
Morane Saulnier 100 ST . . . . . . . . . Continental 0-200-A

Nord NC 854, 854S, 858S . . . . . . . Continental A65, Continental C90

Pazmany PL4A . . . . . . . . . . . . . . Continental A65
* Piel Emeraude CP 301B . . . . . Continental 0-200-A or C90
* Piel Emeraude CP 301A . . . . . Continental 0-200-A
* Piel Emeraude CP 301C . . . . . Continental C90

NOTE: * Front fuel tank must be used for take-off, initial climb and landing.

Piper J2, J3C 65, L4A C85, C90 . . . . . Continental A65, C85, Continental C90
Piper J4A . . . . . . . . . . . . . . . . . . Continental A65
Piper PA12 . . . . . . . . . . . . . . . Lycoming 0-290
Piper PA15 . . . . . . . . . . . . . . . Lycoming 0-145A
Piper PA16 . . . . . . . . . . . . . . . Lycoming 0-235-C
Piper PA16 . . . . . . . . . . . . . . . Lycoming 0-290-D
Piper PA17 . . . . . . . . . . . . . . . Continental A65
Piper PA18 . . . . . . . . . . . . . . . Lycoming 0-360-A
Piper PA18 Cub . . . . . . . . . . . Lycoming 0-290, 0-320-A
Piper PA18-135 . . . . . . . . Lycoming 0-290-D, 0-320-A
Piper PA18-150 . . . . . . . . . . . Lycoming 0-360 A
Piper PA19 . . . . . . . . . . . . . . . Continental C90
Piper PA20 . . . . . . . . . . . . . . . Lycoming 0-290
Piper PA22-108 . . . . . . . . . . . Lycoming 0-235-C
Piper PA22-135 . . . . . . . . . . . Lycoming 0-290
Piper PA22-150 . . . . . . . . . . . Lycoming 0-320-A
Piper PA22-160 . . . . . . . . . . . Lycoming 0-320-B
Piper PA28-140 . . . . . . . . . . . Lycoming 0-320-E
Piper PA28-151 . . . . . . . . . . . Lycoming 0-320-E
Piper PA28-160 . . . . . . . . . . . Lycoming 0-320-B
Piper PA28-180 . . . . . . . . . . . Lycoming 0-360-A
Piper PA28R-180 . . . . . . . . . . . Lycoming 10 360-B
Piper PA28R-200 . . . . . . . . . . . Lycoming 10 360-C
Piper PA28-181 . . . . . . . . . . . Lycoming 0-360-A
Piper PA38-112 . . . . . . . . . . Lycoming 0-235-L
Pitts S1C . . . . . . . . . . . . . Lycoming 0-320-A
Pitts S1D . . . . . . . . . . . . . Lycoming 0-360-A

Rallye MS880B . . . . . . . . . . Continental 0-200-A
Rallye MS883 . . . . . . . . . . . Lycoming 0-235-C
Rallye 885 . . . . . . . . . . . . . Continental 0-235-C
Rallye 885 . . . . . . . . . . . . . Continental 0-300-A
Rallye R2100 . . . . . . . . . . . Lycoming 0-235-H
Rallye 100ST . . . . . . . . . . . . Continental 0-200-A
Rallye 110ST . . . . . . . . . . . . Lycoming 0-235-L
Rallye 150ST . . . . . . . . . . . . Lycoming 0-320-E
Rallye 180T . . . . . . . . . . . . Lycoming 0-360-A
Rallye ST150 . . . . . . . . . . . Lycoming 0-320-E
Rallye TB9 . . . . . . . . . . . . Lycoming 0-320-D
Rand KR2 . . . . . . . . . . . . . Volkswagen
Rearwin Cloudster . . . . . . . . . . Royce 7G
Replica SE5A . . . . . . . . . . . Continental C90
Replica SE5A . . . . . . . . . . . Continental 0-200A
Replica WAR Sea Fury . . . . . Continental 0-200A
Robin HR200/100 . . . . . . . Lycoming 0-235-H
Robin 1180TD Aiglon . . . . . Lycoming 0-360-A
Robin 2100A . . . . . . . . . . . Lycoming 0-235-H
Robin R2112 Alpha . . . . . . Lycoming 0-235-L
Robinson R22 Helicopter . . . . Lycoming 0-320-A
Rollason Beta . . . . . . . . . . . Continental C90
Rutan Varieze . . . . . . . . . . . Continental 0-200A

Scheibe SF3A/C . . . . . . . . . . Continental C90
Scintex CP 301-C2 . . . . . . Continental C90
Scintex CP1310 . . . . . . . . . Continental 0-200
Shield Xyla . . . . . . . . . . . Continental A65
Sipa 91, 901, 902, 903 . . . . . Continental C90, C85
Socata TB9 . . . . . . . . . . . Lycoming 0-320-D or 0-320-E
Socata TB10 . . . . . . . . . . . Lycoming 0-360-A
Sonerai 1, 11 . . . . . . . . . . . . VW
Sopwith Dove . . . . . . . . . . . Le Rhone
Sopwith Pup . . . . . . . . . . . . . Le Rhone
Sopwith Tabloid . . . . . . . . . . Continental C90
Sparton Arrow . . . . . . . . . . . Cirrus Hermes 2
Stampe SV4A . . . . . . . . . . . Renault 4PO5
Stampe SV4 . . . . . . . . . . . . Gipsy Major 10 Mk 1
Stampe SV4C . . . . . . . . . . . Renault 4PO3
Stitts Playboy . . . . . . . . . . . Continental A75
Stolp Starlet . . . . . . . . . . . Continental C90
Stolp V Star SA900 
Storey TSR3

Taylorcraft Plus D
Taylorcraft BC-12D
Taylorcraft F.19
Taylorcraft F.21
Taylor Monoplane
Taylor Titch
Thruxton Jackaroo
Tipsy Belfair
Tipsy Junior
Tipsy Nipper Mk1, Mk2, T66, RA45 Series 3
Tipsy Trainer
Turner TSW
Volmer Sportsman
Wittman Tailwind
WAR FW 190
Zlin 526

NOTE: (1) In certain aircraft issued with a Permit to Fly the use of MOGAS is already permitted by the appropriate aircraft documents and these aircraft are not affected by this Notice.

NOTE: (2) Piper PA23-160 was included in Schedule 1 of AN 98 Issue 11 in error and is now deleted.

NOTE: (3) The following aircraft/engine combinations have been deleted from the list:
Grumman American AA1B Trainer
Gulfstream American AA5A
Gulfstream American AA5B
Piper PA28 Warrior

Continental 0-200-A
Continental C90
Continental C90, Cirrus Minor 1
Continental A65
Continental 0-200-A
Lycoming 0-235-L
VW, JAP 100
Continental C85, C90, 0-200A
Gipsy Major 1
Walter Mikron
Walter Mikron
VW
Walter Mikron
Lycoming 0-320-A
Continental C90, Pobjoy Niagara
Continental C90, 0-200-A
Continental 0-200A
Walter Minor 6-III

Continental 0-235-L2C
Lycoming 0-320-E
Lycoming 0-360-A
Lycoming 0-320-E3D
AIRWORTHINESS NOTICE No. 98
Schedule 2
18 March 2003

1 Motor gasoline supplied to an aerodrome installation for use in general aviation aircraft must meet one of the following conditions:

1.1 It has been obtained from a company which has confirmed that it will give prior warning of any intention to change significantly the constituents of the fuel supplied.

1.1.1 Currently there are no companies giving such an undertaking.

1.2 A sample from each delivery (or from the bulk storage from which delivery was made) has been analysed by a competent analyst and the analysis supplied to a person authorised by CAA to accept such analyses. Fuel meeting BS 4040 : 1988 specification and with 40% or less aromatics, 10% or less olefines by volume, no alcohol or other substitute fuels and no additives other than those recognised for anti-oxidants and anti-knock purposes will normally be acceptable.

1.2.1 Those persons currently holding Authorisation/Approval by the CAA to accept analyses are as follows:

SGS United Kingdom Limited,
Rossmore Business Park,
Ellesmere Port,
South Wirral,
Cheshire
CH65 3EN  AI/8947/84

ITS Testing Services (UK) Ltd.,
Caleb Brett,
Caleb Brett House,
734 London Road,
West Thurrock,
Essex,
RM20 3NL.  AI/9201/89

Mr S J Sullivan,
Chief Chemist,
E W Saybolt & Co., (UK) Ltd.,
Oliver Road,
Riverside Estate,
West Thurrock,
Grays,
Essex
RM16 1ED.  9/97/260A
Use Of Filling Station Forecourt Motor Gasoline (MOGAS) In Certain Light Aircraft

1  INTRODUCTION

1.1  Airworthiness Notice No. 98 introduced arrangements permitting the use of motor gasoline (MOGAS), but excluded the practice of using fuel obtained direct from a filling station forecourt. This restriction is lifted in respect of certain light aircraft classes and categories of Certification of Airworthiness, defined in this Airworthiness Notice. Accordingly, the CAA has issued two Exemptions in the terms set out in Appendices 1 and 2 to this Notice No. 98A. Aircraft which do not satisfy these conditions may be eligible for using MOGAS in accordance with Airworthiness Notice No. 98 or as a result of Modification action approved by the CAA.

CAUTION: BS EN228: 1995 and BS 7070 (unleaded) MOGAS or MOGAS of any standard other than BS 4040 is not permitted by either this Notice No. 98A or Airworthiness Notice No. 98. (Refer to Airworthiness Notice No. 98B.)

1.2  To permit the use of BS 4040:1988 MOGAS from filling station forecourts, this Notice contains an Exemption from some of the requirements of Article 101 of the ANO subject to certain conditions. (See Appendix 2 to this Airworthiness Notice.)

2  GENERAL

2.1  It should be noted that although the CAA is satisfied that the qualifying aircraft/engines may be operated with adequate safety on alcohol free filling station forecourt fuel, provided the limitations* are observed, the CAA takes no responsibility for infringement of manufacturer’s warranty, accelerated deterioration of the engine or airframe components, or any other long term deleterious effects.

NOTE: * With regard to the limitation on fuel temperature, it may be assumed that the temperature of the fuel in the tank prior to the commencement of the flight is less than 20°C unless the ambient temperature has been in excess of this temperature for some hours, or the aircraft has been standing in continuous direct sunshine.

2.2  Because of likely differences between filling station forecourt fuel and Avgas, the following precautions are to be taken:

(a)  Test the fuel to ensure it contains NO alcohol.

NOTE: A simple method for determining the presence of alcohol in fuel is to thoroughly shake a test cylinder containing 90 ml of the fuel to be tested and 10 ml of water. If, after settling, the water volume has increased, then alcohol is probably present in the fuel and the fuel is, therefore, unsuitable for aviation use.

(b)  Use only freshly obtained supplies; avoid long storage in the aircraft fuel tank.

(c)  If the aircraft has been standing for 24 hours or longer, check fuel for water.

(d)  As carburettor icing is more likely when using MOGAS, particular attention should be paid to the use of carburettor hot air/heating. For pilot selectable systems this should include:

• making sure, during the pre-take-off checks, that a good RPM drop is obtained when hot air is selected,
• intermittent selection of hot air in flight whether or not the symptoms of loss of power are experienced.

For non selectable systems, ensure that the carburettor heating is serviceable.

(e) In the course of the daily check and other routine inspections, pay particular attention to non-metallic fuel pipes and seals for signs of leaks or deterioration.

(f) After any prolonged period of heat soak at low fuel flow (e.g. hot day ground idling) establish the ability to maintain full power before commencing a take-off.

3 RECORDING USE OF FILLING STATION FORECOURT MOTOR GASOLINE (MOGAS)
All operating times with fuel containing 25% or more of MOGAS must be recorded in the airframe log book, and block records must be transferred at appropriate intervals into the engine log book(s).

4 CANCELLATION This Notice cancels Airworthiness Notice No. 98A Issue 1, dated 16 March 1990 which should be destroyed.
AIRWORTHINESS NOTICE No. 98A
Appendix 1
Issue 2
18 March 1999


1 The Civil Aviation Authority, in exercise of its powers under Article 116 of the Air Navigation Order 1995, as amended, hereby exempts the aircraft set out in Schedule 1 hereto, from the provisions of Article 8(1) of the said Order to the extent necessary to enable it to fly using four star Motor Gasoline to BSI specification BS 4040 : 1988. Unless it is known on a particular flight that the proportion of Motor Gasoline in the aircraft’s fuel is less than 25%, the aircraft shall be deemed for the purpose of this Exemption to be using Motor Gasoline.

2 This Exemption is subject to the following conditions:
   (a) No Motor Gasoline fuel shall be used for flight unless it complies with BS 4040 : 1988 and contains no alcohols.
   (b) No flight shall be made pursuant to this Exemption unless either:
       (i) the temperature of the fuel in the tank prior to the commencement of the flight may reasonably be assumed to be less than 20°C and the aircraft is flown below a pressure altitude of 6000 ft, or
       (ii) the written permission of the CAA has been obtained to operate to different limitations and that the terms of the permission are complied with.
   (c) No flight shall be made pursuant to this Exemption unless the limitations pursuant to sub-paragraph (b) above due to the use of Motor Gasoline are set out on a placard which is affixed in a conspicuous position in the flight crew compartment of the aircraft.
   (d) In respect of every flight pursuant to this Exemption, there shall be endorsed in the aircraft log book maintained in respect of the aircraft a statement that the flight was undertaken pursuant to this Exemption. Block records must be transferred to the engine log book at appropriate intervals.

3 The Exemption dated 21 July 1995 is hereby revoked.

4 This Exemption shall have effect from the date hereof until revoked.

Signed
for the Civil Aviation Authority
Dated 18 March 1999
AIRWORTHINESS NOTICE No. 98A
Schedule 1
18 March 1999

1 Motor Gasoline to BSI specification BS 4040 : 1988 but which contains NO alcohol may be obtained directly from a filling station forecourt for use in aircraft which meet the following three conditions; unless prohibited by paragraph 2.

1.1 The engine/aircraft combination is approved to use:
   • MOGAS to Specification BS4040: 1988
   or
   • AVGAS and the engine has a compression ratio not greater than 7.5:1 and is not supercharged; an engine with a compression ratio greater than 7.5:1 is acceptable provided the engine/aircraft combination is listed in Schedule 1 of Airworthiness Notice No.98.

1.2 The aircraft is the subject of a Permit to Fly, a Private Category Certificate of Airworthiness, A or B Conditions or an individual Exemption;

1.3 The aircraft is:
   • a microlight aeroplane, or
   • a gyroplane, or
   • a powered sailplane, or
   • a single engine light aircraft (below 2730 kg) and listed in Schedule 1 of Airworthiness Notice No. 98.

NOTE: If an aircraft is not listed in Schedule 1 of Airworthiness Notice No. 98, it may be because a request has not been received by the CAA for its inclusion.

2 Engine/Aircraft combinations falling outside the scope of this Airworthiness Notice include:
   (a) Those combinations, unless listed in Schedule 1 of Airworthiness Notice No. 98, for which the Aircraft Manuals specifically exclude the use of MOGAS.
   (b) The following types for which experience with Airworthiness Notice No. 98 has been unsatisfactory:
      - Grumman American AA1B Trainer – Lycoming 0-235-L2C
      - Gulfstream American AA5A – Lycoming 0-320-E
      - Gulfstream American AA5B – Lycoming 0-360-A
      - Piper PA28 Warrior – Lycoming 0-320-E3D
      + Jodel DR1050 –Continental 0-200-A
      + Jodel D140A -Lycoming 0-360-A
      + Piel Emeraude CP301B : Continental C90
      + Piel Emeraude CP301A : Continental 0-200A or C90
      + Piel Emeraude CP301B : Continental 0-200A
      + Piel Emeraude CP1301C : Continental C90

NOTE: + Unless the front fuel tank is used for take-off, initial climb and landing.

1 The Civil Aviation Authority, in exercise of its powers under Article 116 of the Air Navigation (No. 2) Order 1995 ('the Order') hereby exempts any person from the requirements of Article 101(1)(a)(iii), 101(1)(b) and 101(3)(b) of the said Order subject to the following conditions.

2 This exemption shall only be relied upon when the following conditions are complied with:
   (a) The person relying on this exemption shall be causing or permitting leaded motor gasoline fuel to be delivered to an aircraft specified in Schedule 1 hereto which fuel complies with specification BS4040:1988;
   (b) If the said fuel has not been obtained directly from a filling station forecourt pump carrying the appropriate fuel specification markings, the person shall comply with the requirements of Article 101(1)(a)(iii);
   (c) The person who has caused or permitted the fuel to be delivered to the aircraft, shall take all reasonable steps to ensure that for every flight made by that aircraft on which leaded fuel delivered pursuant to this exemption has been consumed, there is endorsed in the aircraft log book maintained in respect of the aircraft, a statement that the flight was undertaken in connection with this exemption. Block records must be transferred to the engine log book at appropriate intervals;
   (d) The person who has caused or permitted the fuel to be delivered to the aircraft, shall take all reasonable steps to ensure that any unsatisfactory engine operation or failure which may be attributed to the use of leaded motor gasoline shall be immediately reported to the CAA, Powerplant Department, Safety Regulation Group, Aviation House, Gatwick;
   (e) Records detailing the source and dates of fuel procurement and use must be maintained.

3 This exemption shall have effect from the date hereof until revoked.

Signed
for the Civil Aviation Authority
Date 18 March 1999
Use Of Filling Station Forecourt Unleaded Motor Gasoline In Microlight Aeroplanes

1 INTRODUCTION

Airworthiness Notice No. 98 and No. 98A permit the use of leaded Motor Gasoline (MOGAS) to Specification BS4040. It is well known that the supplies of this fuel will become very limited after the year 2000. Consideration has been given to the possibility of using unleaded MOGAS to specification BS EN228:1995 and BS7070 in aircraft powered by piston engines (including rotary piston engines). Although some engines are type approved to operate on this fuel, MOGAS supplies may not be obtainable in accordance with Article 101 of the Air Navigation Order. Accordingly, this Airworthiness Notice No. 98B by means of the attached Exemption to Article 101 of the Air Navigation Order, permits the operation of microlight aeroplanes using unleaded motor gasoline, subject to the conditions stated in this Notice.

2 GENERAL

2.1 The flight and landing characteristics of microlight aeroplanes are designed to be such that an engine failure resulting in partial or total loss of power only, is not an unacceptable safety risk. However it is a condition of the use of unleaded MOGAS that the user fully accepts that there is an increased risk of engine failure when using fuels obtained from filling station forecourts rather than dedicated aviation fuel installations.

2.2 The provisions of this Notice are not applicable to aircraft other than microlight aeroplanes. Accordingly other aircraft may have to use alternative approved fuels, e.g. AVGAS when leaded MOGAS is no longer available, pending a supply of aviation grade unleaded fuel.

2.3 Aviation grade unleaded fuel is currently under development and should become commercially available during the next few years.

3 CONDITIONS FOR USING UNLEADED MOTOR GASOLINE OBTAINED FROM A FILLING STATION FORECOURT

(a) The aircraft is a microlight aeroplane within the definition of ANO Article 118, having in force a valid Permit to Fly issued by the Authority or conducting flight trials under an appropriate permission (e.g. B Conditions) for the purpose of obtaining such a Permit.

(b) The engine/aircraft combination is CAA approved to use unleaded fuel complying with Specification BS EN228:1995 or BS7070.

(c) Records of fuel supply must be maintained (date, location of purchase, quantity purchased, method of storage).

4 PRECAUTIONS

(a) The fuel must not be rendered unfit by storage, contamination etc.

(b) Use only freshly obtained supplies; avoid long storage in the aeroplane fuel tank or in containers.
(c) The fuel must be checked for the presence of water if the aeroplane has been standing for 24 hours or longer.

(d) During the daily check and other routine inspections, pay particular attention to non-metallic fuel pipes and seals for signs of leaks or deterioration.

(e) The ability to maintain Take-Off power must be verified before the aircraft is committed to completing a take-off.

| 5 | CANCELLATION This Notice cancels Airworthiness Notice No. 98B, Issue 1, dated 18 March 1999, which should be destroyed. |

1 The Civil Aviation Authority in exercise of its powers under the Article 116 of the Air Navigation Order (No. 2) 1995 ('the Order') hereby exempts any person from the requirements of Article 101(1)(a)(iii), 101(1)(b) and 101(3)(b) of the said Order subject to the following conditions.

2 This exemption shall only be relied upon when the following conditions are complied with:
   (f) The person relying on this exemption shall be causing or permitting unleaded motor gasoline fuel to be delivered to an aircraft specified in Schedule 1 or Schedule 2 hereto which fuel complies with specification BS EN228:1995 or BS7070;
   (g) If the said fuel has not been obtained directly from a filling station forecourt pump carrying the appropriate fuel specification markings, the person shall comply with the requirements of Article 101(1)(a)(iii);
   (h) The person who has caused or permitted the fuel to be delivered to the aircraft, shall take all reasonable steps to ensure that for every flight made by that aircraft on which unleaded fuel delivered pursuant to this exemption has been consumed, there is endorsed in the aircraft log book maintained in respect of the aircraft, a statement that the flight was undertaken in connection with this exemption. Block records must be transferred to the engine log book at appropriate intervals.
   (i) The person who has caused or permitted the fuel to be delivered to the aircraft, shall take all reasonable steps to ensure that any unsatisfactory engine operation or failure which may be attributed to the use of unleaded motor gasoline shall be immediately reported to the CAA, Powerplant Department, Safety Regulation Group, Aviation House, Gatwick;
   (j) No unleaded motor gasoline fuel shall be used for flight unless it complies with specification BS EN228:1995 or BS7070.
   (k) Records detailing the source and dates of fuel procurement and use must be maintained.

3 This exemption shall have effect from the date hereof until revoked.

Signed
for the Civil Aviation Authority
Dated 20 October 1999
Motor gasoline to specification BS EN228:1995 or BS7070 may be obtained directly from a filling station forecourt for use in aircraft which meet the following conditions:

1. The aircraft is a microlight aeroplane within the definition of ANO Article 118 having in force a valid Permit to Fly issued by the Authority.

1.2 The engine/aircraft combination is approved to use unleaded motor gasoline to specification BS EN228:1995 or BS7070.
AIRWORTHINESS NOTICE No. 98B
Schedule 2
20 October 1999

1  Motor Gasoline to Specification BS EN228:1995 or BS7070 may be obtained directly from a filling station forecourt for use in aircraft which meet the following conditions:

1.1 The aircraft is a Small Light Aeroplane, which means an aeroplane designed to carry not more than two persons, which has a maximum total weight authorised not exceeding 450 kg for two seat, or 300 kg for single seat aircraft, and a wing loading at the maximum total weight authorised not exceeding 25 kg per square metre, or a stalling speed at the maximum total weight authorised not exceeding 65 kilometres per hour Calibrated Air Speed.

1.2 The engine/aircraft combination is approved to use unleaded motor gasoline to Specification BS EN228:1995 or BS7070.
Use Of Filling Station Forecourt Unleaded Motor Gasoline In Certain Light Aircraft

1 INTRODUCTION
Airworthiness Notice Nos. 98 and 98A permit the use of leaded Motor Gasoline (MOGAS) to Specification BS4040. It is well known that the supplies of this fuel will become very limited after the year 2000. Consideration has been given to the possibility of using unleaded MOGAS to specification BS EN228:1995 and BS7070 in aircraft powered by piston engines (including rotary piston engines). Although some engines are type approved to operate on this fuel, MOGAS supplies may not be obtainable in accordance with Article 112 of the Air Navigation Order 2000. Accordingly, this Airworthiness Notice No. 98C by means of the attached Exemption to Article 112 of the Air Navigation Order, permits the operation of certain light aircraft using unleaded motor gasoline obtained from a filling station forecourt, subject to the conditions stated in this Notice. (Airworthiness Notice No. 98B provides a similar Exemption for certain Microlight aeroplanes.)

2 GENERAL
It should be noted that although the CAA is satisfied that the qualifying aircraft/engines may be operated with adequate safety on filling station forecourt fuel, subject to the conditions stated in this Notice, the CAA takes no responsibility for infringement of manufacturer’s warranty, accelerated deterioration of the engine or airframe components, or any other long term deleterious effects.

3 CONDITIONS FOR USING UNLEADED MOTOR GASOLINE OBTAINED FROM A FILLING STATION FORECOURT
(a) The aircraft is a single engine aeroplane or rotorcraft (not exceeding 2730 kg MTWA), excluding aircraft contained in the Schedules to AN 98B.
(b) The engine/aircraft combination is CAA approved to use unleaded fuel complying with Specification BS EN228:1995 or BS7070.
(c) Records of fuel supply must be maintained (date, location of purchase, quantity purchased, method of storage).

NOTE: Aircraft which can comply with 3(b), (as of the date of amendment of this Notice), are listed in Schedule 2 to this Notice together with the associated modifications required.

4 PRECAUTIONS
(a) The fuel must not be rendered unfit by storage, contamination etc.
(b) Only freshly obtained fuels must be used; avoid long storage in the aircraft fuel tank or in containers.
(c) The fuel must be checked for the presence of water if the aircraft has been standing for 24 hours or longer.
(d) During the daily check and other routine inspections, pay particular attention to non metallic fuel pipes and seals for signs of leaks or deterioration.
(e) The ability to maintain Take-Off power must be verified before the aircraft is committed to completing a take-off.

(f) The fuel must be tested to ensure that it contains NO ALCOHOL.

**NOTE:** A simple method for determining the presence of alcohol in fuel is to shake thoroughly a test cylinder containing 90 ml of the fuel to be tested and 10 ml of water. If, after settling, the water volume has increased, then alcohol is probably present in the fuel and the fuel is, therefore, unsuitable for aviation use.
The Civil Aviation Authority in exercise of its powers under the Article 127 of the Air Navigation Order 2000 (‘the Order’) hereby exempts any person from the requirements of Article 112(1)(a)(iii), 112(1)(b) and 112(3)(b) of the said Order subject to the following conditions.

1. This exemption shall only be relied upon when the following conditions are complied with:
   (a) The person relying on this exemption shall be causing or permitting unleaded motor gasoline fuel to be delivered to an aircraft specified in Schedule 1 hereto which fuel complies with specification BS EN228:1995 or BS7070;
   (b) If the said fuel has not been obtained directly from a filling station forecourt pump carrying the appropriate fuel specification markings, the person shall comply with the requirements of Article 112(1)(a)(iii);
   (c) The person who has caused or permitted the fuel to be delivered to the aircraft, shall take all reasonable steps to ensure that for every flight made by that aircraft on which unleaded fuel delivered pursuant to this exemption has been consumed, there is endorsed in the aircraft log book maintained in respect of the aircraft, a statement that the flight was undertaken in connection with this exemption. Block records must be transferred to the engine log book at appropriate intervals.
   (d) The person who has caused or permitted the fuel to be delivered to the aircraft, shall take all reasonable steps to ensure that any unsatisfactory engine operation or failure which may be attributed to the use of unleaded motor gasoline shall be immediately reported to the CAA, Powerplant Department, Safety Regulation Group, Aviation House, Gatwick;
   (e) No unleaded motor gasoline fuel shall be used for flight unless it complies with specification BS EN228:1995 or BS7070.
   (f) Records detailing the source and dates of fuel procurement and use must be maintained.

2. The exemption to Article 101(1)(a)(iii), 101(1)(b) and 101(3)(b) of the Air Navigation Order (1995) dated 20 October 1999 is hereby revoked.

3. This exemption shall have effect from the date hereof until revoked.

Signed
for the Civil Aviation Authority
Dated 20 October 1999
Motor gasoline to specification BS EN228:1995 or BS7070 may be obtained directly from a filling station forecourt for use in aircraft which meet the following three conditions:

(a) The engine/aircraft combination is CAA approved to use unleaded motor gasoline to specification BS EN228:1995 or BS7070.

(b) The aircraft is the subject of a Permit to Fly, a private category Certificate of Airworthiness, A or B Conditions, or an individual Exemption.

(c) The aircraft is a single engine aeroplane or rotorcraft (not exceeding 2730 kg MTWA), excluding aircraft contained in the Schedules to AN 98B.
AIRWORTHINESS NOTICE No. 98C
Schedule 2
16 March 2001

Aircraft and Engine combinations approved by the CAA to use unleaded motor gasoline to specification EN228.

This Schedule 2 lists the aircraft/engine combinations which, up to January 2001, have been approved by the CAA to use fuel conforming with EN228. The approved aircraft are divided into 3 groups:

**Group 1.** Aircraft for which the Type Certificate Holder has shown compliance with the applicable requirements, and for which approval to use EN228 is specified in the Flight Manual or other approved document.

**Group 2.** Aircraft embodying FAA STC-approved modifications to both the engine and the aircraft, where the combination of modifications has been validated by the CAA under Airworthiness Approval Notes 27743 and 27744.

**Group 3.** Aircraft embodying FAA STC-approved modifications to the engine, and for which compatibility between the fuel system and the fuel has been accepted by the CAA. The approval of these aircraft and their modified engines is given under Airworthiness Approval Notes 27742 and 27744.

**NOTE:** Aircraft issued with permits to fly on the basis of recommendations made by organisations holding appropriate approvals issued by the CAA, (e.g. PFA, BMAA, etc), may be approved to use unleaded motor gasoline using the modification approval procedures of those organisations.

**GROUP 1**

Any aircraft which has a valid UK Certificate of Airworthiness in the private category, and has unleaded motor gasoline (EN228 or BS:7070) listed as a suitable fuel in the CAA-approved Flight Manual, or other approved document, may be taken as satisfying paragraph 1(a) of Schedule 1.

**GROUP 2**

These aircraft are listed below. To satisfy paragraph 1(a) of Schedule 1 the aircraft and their engines must be modified in accordance with the referenced FAA STCs and comply with AANs 27743 and 27744.

The aircraft approved to use unleaded motor gasoline conforming with EN228 under AANs 27743 and 27744 are:

<table>
<thead>
<tr>
<th>Aircraft Make</th>
<th>Aircraft Model</th>
<th>STC No.</th>
<th>STC Holder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beech D17S with P&amp;W R-985 with STC SE1860CE</td>
<td>SA2009CE</td>
<td>Petersen Aviation</td>
<td></td>
</tr>
<tr>
<td>Beech 33 Series with TCM IO-470-K or -J engines with STC SE2016CE</td>
<td>SA2049CE</td>
<td>Petersen Aviation</td>
<td></td>
</tr>
<tr>
<td>Aircraft Make</td>
<td>Aircraft Model</td>
<td>STC No.</td>
<td>STC Holder</td>
</tr>
<tr>
<td>---------------</td>
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</tr>
<tr>
<td>Bellanca/ Champion/ Aeronca</td>
<td>7GCAA, 7GCBC, 7AC, 7AC, 7BCM, 7CCM, 7DC, 7DC, 7CCM, 7EC, 7EC, 7FC, 7GC, 7HC, 7JC, 7KC, 7ECA, 7GCB, 7GCA and 7GCA with Lycoming or TCM engines with STCs SE1931CE, SE2035CE, SE2036CE, SE2029CE, SE2030CE or SE2031CE as applicable.</td>
<td>SA1970CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Boeing</td>
<td>75 Series with P&amp;W R-985-, or TCM W670- engines with STCs SE1860CE, or SE2028CE as applicable.</td>
<td>SA1934CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>120, 140 Series with gravity feed to carburettor and TCM C-85 or C-90 Series engines with STC SE2030CE or SE2031CE as applicable</td>
<td>SA2100CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>120, 140 with TCM C-85-12 or -12F engine with STC SE634GL</td>
<td>SA691GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Cessna</td>
<td>140A with TCM C-90-12F engine with STC SE634GL</td>
<td>SA692GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Cessna</td>
<td>140A with gravity feed to carburettor and TCM C-90 or C-85 engine with STC SE2031CE or SE2030CE as applicable</td>
<td>SA2096CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>150, 150A through 150M, A150K, A150L, A150M, 152 and A152; - aircraft with TCM O-200-A engines with STC SE2031CE, or low-compression Lycoming O-320 engines with STC SE1931CE</td>
<td>SA2048CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>150, 150A through 150H, and 150J through 150M - aircraft with TCM O-200-A engines with STC SE634GL</td>
<td>SA633GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Cessna</td>
<td>170, 170A, 170B with TCM C145-2, -2H with STC SE693GL</td>
<td>SA762GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Cessna</td>
<td>170A, 170B with gravity feed to carburettor and TCM C145 or O-300 engine with STC SE2006CE</td>
<td>SA2019CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>172, 172A through 172H with TCM O-300- engines with STC SE2006CE, and 172I, K, L &amp; M with Lycoming O-320-E2D engine with STC SE1931CE</td>
<td>SA1948CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Aircraft Make</td>
<td>Aircraft Model</td>
<td>STC No.</td>
<td>STC Holder</td>
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<tr>
<td>Cessna</td>
<td>172, 172A, B, C, D, E, F, G, &amp; H with TCM O-300-A, -B, -C, or -D with STC SE693GL</td>
<td>SA761GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Cessna</td>
<td>172I, K, L, M with Lycoming O-320-E2D with STC SE800GL</td>
<td>SA801GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Cessna</td>
<td>175, 175A, 175B, 175C, P172D with gravity feed to carburettor and TCM GO-300 engine with STC SE2105CE</td>
<td>SA2138CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>175, 175A, 175B, 175C, P172D with GO-300-A, -B, -C, -D, or -E engine with STC SE693GL</td>
<td>SA763GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Cessna</td>
<td>177 with Lycoming O-320-E2D engine with STC SE1931CE</td>
<td>SA2010CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>177 with Lycoming O-320-E2D engine with STC SE800GL</td>
<td>SA803GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Cessna</td>
<td>182, 182A through 182H, 182J through 182N and 182P with TCM O-470-L, -R, -S engines with STC SE693GL</td>
<td>SA694GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Cessna</td>
<td>188, 188A, 188B with TCM O-470-R engine with STC SE1997CE</td>
<td>SA2013CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>190, 195, 195A, 195B with TCM engines with STC SE2028CE, or Jacobs engines with STCs SE2416CE, SE2417CE, or SE2418CE</td>
<td>SA2421CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>305B, 305E, T0-1D, 0-1D, 0-1F with TCM O-470- engines with STC SE2094CE</td>
<td>SA2098CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>305A, 305C, 305D, 305F, 0-1A, 0-1E, 0-1G with TCM O-470- engines with STC SE2094CE</td>
<td>SA2099CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Cessna</td>
<td>305A, 305C, 305D, 305F, 0-1A, 0-1E, 0-1G with TCM O-470-11 or -11B engine with STC SE693GL</td>
<td>SA759GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Aircraft Make</td>
<td>Aircraft Model</td>
<td>STC No.</td>
<td>STC Holder</td>
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</tr>
<tr>
<td>Cessna</td>
<td>305B, 305E, T0-1A, 0-1D, 0-1F with TCM O-470-15 engine with STC SE693GL</td>
<td>SA760GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>DHC</td>
<td>DHC-2 with P&amp;W R-985 with STC SE1860CE</td>
<td>SA1882CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Luscombe</td>
<td>8, 8A, 8C, 8D, 8E, T-8F with TCM A-50-1, A-65-1, A-75-8J, C-85-12, C-90-12F with STC SE634GL</td>
<td>SA730GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Maule</td>
<td>M-4, M-4C, M-4S, M-4T with gravity feed to carburettor and TCM O-300 engine with STC SE2006CE</td>
<td>SA2097CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Maule</td>
<td>M-5-235, M-6-235, M-7-235, M-7-235A, M-7-235B, MX-7-235C, MX-7-235, M-7-235C; - with Lycoming O-540-B4B5 engines modified to STC SE1909CE</td>
<td>SA2963SO</td>
<td>Maule Flight</td>
</tr>
<tr>
<td>Piper</td>
<td>J-3 with TCM A-40 engine with STC SE634GL</td>
<td>SA775GL</td>
<td>Experimental Aircraft Association</td>
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<tr>
<td>Piper</td>
<td>J3F-50, J3F-50S, J3F-60, J3F-60S, J3F-65, J3F-65S with TCM engines with STC SE634GL</td>
<td>SA832GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Piper</td>
<td>J3L, J3L-S, J3L-65, J3L-65S with TCM engines with STC SE634GL</td>
<td>SA833GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Piper</td>
<td>J-3C-65, J3C-65S, PA-11, PA-11S with gravity feed to carburettor and TCM A-65-(), C-75-(), C-85-(), and C-90-() engines with STCs SE2029CE, SE2030CE, or SE2031CE</td>
<td>SA2080CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Piper</td>
<td>J4, J4A, J4A-S with TCM A-50-1, A-65-1 engines with STC SE634GL</td>
<td>SA737GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Piper</td>
<td>J4E, L4E with TCM A-75-9 engine with STC SE634GL</td>
<td>SA738GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Piper</td>
<td>J4E, J4A-S with gravity feed to carburettor and TCM A-65-() engines with STC SE2029CE</td>
<td>SA2146CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Piper</td>
<td>J4E, L4E with gravity feed to carburettor and TCM A-75-() engines with STC SE2030CE</td>
<td>SA2147CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Aircraft Make</td>
<td>Aircraft Model</td>
<td>STC No.</td>
<td>STC Holder</td>
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<tr>
<td>Piper</td>
<td>PA-12, PA-12S with Lycoming O-235-(), O-290-(), O-320-() engines, with STC SE1931CE, SE2035CE, or SE2036CE.</td>
<td>SA2075CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Piper</td>
<td>PA-14 with gravity feed to carburettor and Lycoming O-235-() engines with STC SE2035CE.</td>
<td>SA2083CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Piper</td>
<td>PA-16, PA-16S with gravity feed to carburettor and Lycoming O-235-() engines with STC SE2035CE.</td>
<td>SA2082CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Piper</td>
<td>PA-17 with TCM A-65-8 or -8F engines, with STC SE634GL</td>
<td>SA766GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Piper</td>
<td>PA-20 with Lycoming O-320 engine, with STC SE1931CE</td>
<td>SA2012CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Piper</td>
<td>PA-25 and PA-25-235 with Lycoming O-540-B Series engine, with STC SE1931CE</td>
<td>SA1932CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Piper</td>
<td>PA-28-140, -150, -151 with Lycoming O-320-E2A, -A2B, -E3D engines with STC SE800GL</td>
<td>SA802GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Piper</td>
<td>PA-28-235 with Lycoming O-540-B2B5, B1B5, B4B5 with STC SE1909CE</td>
<td>SA1964CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Aircraft Make</td>
<td>Aircraft Model</td>
<td>STC No.</td>
<td>STC Holder</td>
</tr>
<tr>
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</tr>
<tr>
<td>Reims Cessna</td>
<td>F172D, E, F, G, H, K, L, M with TCM O-300- engines with STC SE2006CE, and with Lycoming O-320-E2D engine with STC SE1931CE</td>
<td>SA00215WI</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Reims Cessna</td>
<td>F182P with TCM O-300- engines with STC SE2006CE, and with Lycoming O-320-E2D engine with STC SE1931CE</td>
<td>SA00214WI</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Robinson</td>
<td>R22 with Lycoming O-320-A2B or A2C with STC SE1931CE</td>
<td>SH2011CE</td>
<td>Howard Fuller</td>
</tr>
<tr>
<td>Stinson</td>
<td>108, 108-1, 108-2, 108-3 with gravity feed to carburettor and Franklin 6A4-() engines with STC SE2127CE</td>
<td>SA2128CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Stinson</td>
<td>SR-5, -5A, -5B, -6C, -6E, L12; - with gravity feed and Lycoming R-680-() radial engines with STCs SE2409CE, SE2413CE, or SE2414CE as applicable</td>
<td>SA00002WI</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Stinson</td>
<td>L5B, -5C, -5D, -6E, -5E-1, -5G; - with gravity feed and Lycoming O-435-() engines with STC SE2278CE</td>
<td>SA2396CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Taylorcraft</td>
<td>19 and F19 with TCM C-85-12, -12F, or O-200-A engine with STC SE634GL</td>
<td>SA769GL</td>
<td>Experimental Aircraft Association</td>
</tr>
<tr>
<td>Taylorcraft</td>
<td>DC-65 (L2, L2C), DCO-65 (L2A, L2B, L2M) with TCM A-65-8 engine with STC SE634GL</td>
<td>SA770GL</td>
<td>Experimental Aircraft Association</td>
</tr>
</tbody>
</table>
GROUP 3

These aircraft are listed below. To satisfy paragraph 1(a) of Schedule 1 the aircraft must be modified in accordance with the referenced FAA STCs and comply with AANs 27742 and 27744.

The aircraft approved to use unleaded motor gasoline conforming with EN228 under AANs 27742 and 27744 are:

<table>
<thead>
<tr>
<th>Aircraft Make</th>
<th>Aircraft Model</th>
<th>STC No.</th>
<th>STC Holder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taylorcraft</td>
<td>19 and F19 with TCM C-85-12, -12F, or O-200-A engine with STC SE2030CE or SE2031CE</td>
<td>SA2076CE</td>
<td>Petersen Aviation</td>
</tr>
<tr>
<td>Taylorcraft</td>
<td>DC-65 (L2, L2C), DCO-65 (L2A, L2B, L2M) with TCM A-65-8 engine with STC SE2029CE</td>
<td>SA2086CE</td>
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| Minicab GY20, GY201   | Continental A65   | SE2029CE - Petersen Aviation  
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| Minicab GY30, JB –01  | Continental C90   | SE2031CE - Petersen Aviation  
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| Midget Mustang        | Continental C85, C90 | SE2030CE - Petersen Aviation  
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| Morane N Replica      | Continental C90   | SE2031CE - Petersen Aviation                                                              |
| Morane Saulnier MS 892A | Lycoming 0–320–E | SE1931CE - Petersen Aviation  
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| Morane Saulnier 100ST  | Continental 0–200–A | SE2031CE - Petersen Aviation  
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| Nord NC 854,854S,858S | Continental A65, Continental C90 | SE2029CE - Petersen Aviation  
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| *Piel Emeraude CP 301C | Continental C90   | SE2031CE - Petersen Aviation  
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| Piper J4A             | Continental A65   | SE2029CE - Petersen Aviation  
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| Piper PA12            | Lycoming 0–290    | SE2036CE - Petersen Aviation  
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| Piper PA15            | Lycoming 0–145-A  | SE2466CE - Petersen Aviation                                                              |</p>
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| Replica WAR Sea Fury | Continental 0–200-A | SE2031CE - Petersen Aviation 
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| Robinson R22 Helicopter | Lycoming 0–320–A | SE1931CE - Petersen Aviation  
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| Rollason Beta | Continental C90 | SE2031CE - Petersen Aviation  
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| Rutan Varieze | Continental 0–200-A | SE2031CE - Petersen Aviation  
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| Scheibe SF3A/C | Continental C90 | SE2031CE - Petersen Aviation  
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| Scintex CP1310 | Continental 0–200 | SE2031CE - Petersen Aviation  
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| Shield Xyla   | Continental A65 | SE209CE - Petersen Aviation    
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| Sipa 91, 901, 902, 903 | Continental C90, C85 | SE2031CE - Petersen Aviation  
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| Socata TB9     | Lycoming 0–320–E | SE1931CE - Petersen Aviation  
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| Sopwith Tabloid| Continental C90 | SE2031CE - Petersen Aviation  
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| Stitts Playboy| Continental A75 | SE2030CE - Petersen Aviation  
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| Stolp Starlet | Continental C90 | SE2031CE - Petersen Aviation  
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| Stolp V Star SA900 | Continental 0–200–A | SE2031CE - Petersen Aviation 
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* Front fuel tank must be used for take-off, initial climb and landing.
Galley Equipment

1 APPLICABILITY This Airworthiness Notice is applicable to all galley equipment installed or carried for use on aircraft. For the purpose of this Notice, ‘galley equipment’ includes service carts, catering trolleys and their means of physical restraint in the passenger area; galley inserts including ovens, water boilers, coffee makers, refrigerators, etc., and control panels dedicated to individual equipment.

2 INTRODUCTION

2.1 It has become increasingly apparent that some designers and installers of galley equipment installed or carried in aircraft have not recognised the need to satisfy relevant requirements of JAR-25 or of BCAR, as appropriate, and that as a result in certain instances safety has been prejudiced.

2.2 The Air Navigation Order 2000 Article 14(6) requires that:- “All equipment installed or carried in an aircraft, whether or not in compliance with this Article, shall be so installed or stowed and so maintained and adjusted as not to be a source of danger in itself or to impair the airworthiness of the aircraft or the proper functioning of any equipment or services necessary for the safety of the aircraft.”

2.3 So far as type certification of aeroplanes is concerned, the applicable requirements stated in JAR 25.789 and 25X1499 or in BCAR Section D (D6-1, paragraph 2 and D6-13, paragraph 7.3) cover the design, installation and stowage aspects of any galley equipment which is included in the Type Design for which the Type Certificate is issued. Similar requirements are also applicable to galley equipment installed in aircraft certificated to other BCAR and JAR codes.

2.4 This Notice is issued to rectify the situation in paragraph 2.1 and to emphasise that these requirements constitute the basis for certification of galley equipment, not only when they form part of the aircraft Type Design but also, in accordance with BCAR Chapter A2-5, paragraph 2.1.5, when they are fitted in an aircraft already issued with a Certificate of Airworthiness, or when such equipment fitted to an aircraft is modified. This Notice also defines the procedures which apply to the certification of galley equipment.

3 COMPLIANCE

With effect from 1 January 1985 all equipment used in all galley installations is required to satisfy the requirements stated herein.

4 PROCEDURE

4.1 Trolleys and items of galley equipment which require electrical power are, unless otherwise specifically agreed by the CAA, classified as ‘Controlled Items’ of equipment as defined in BCAR Chapter A4-8, paragraph 2.3(d) and approved under one of the procedures of BCAR Chapter A4-8, paragraph 5.

4.2 Catering boxes and equipment not requiring electrical power are classified as ‘Uncontrolled Items’ and are assessed under the procedures detailed in BCAR Chapter A4-8, paragraph 4. It is necessary, therefore, for an appropriately approved Organisation to accept responsibility as to the suitability and quality of such equipment.
4.3 Catering trolleys, designed for use in standard galleys on a variety of aircraft types, are considered to be common user items and as such are certificated under the accessory procedures of BCAR Chapter A4-8.

5 INTERPRETATION OF APPLICABLE REQUIREMENTS

5.1 The design of galleys shall comply with the intent of JAR 25X1499 and its associated ACJ or BCAR Chapter D6-13, paragraph 7.3 and the related Appendix No. 4. Additionally, general requirements for all electrical equipment in respect of electrical and magnetic interference, such as BCAR Chapter D6-13, paragraph 6.8, apply.

5.2 The design of all galley equipment shall minimise the risk of personal injury to the user, as required by JAR 25X1360 or BCAR Chapter D6-13, paragraph 6.7, as applicable. In particular, vessels containing heated liquids over 45°C shall have closely fitting integral lids. The use of open hotplates and open cooking utensils such as frying pans is not permitted.

5.3 Galley equipment and its installation shall have adequate strength to comply with the emergency alighting, flight and ground cases of BCAR Chapters D3-8, D3-2, D3-3, D3-5 or JAR 25.561, JAR 25.471 to 25X519, and JAR 25.331 to 25.351 inclusive, as applicable and shall comply with JAR 25.789.

5.4 The local attachment factor of 1.33 applies, in addition to the relevant prescribed acceleration forces, to door hinges, catches and restraint means which form part of the equipment structure, and to structure adjacent to the restraint means provided by the galley or similar stowage.

5.5 Doors, including their hinges and catches, of catering boxes, etc., must be of strength compatible with the placarded contents weight, unless use of the box is restricted to stowage in completely enclosed galley, or similar compartments. This also applies to the doors of catering trolleys, but in their case, the total structure of the trolley must also be shown to be in compliance with the strength requirements taking into account means of retention of the trolley in the aircraft.

5.6 The design of the trolley shall be such that the loads imposed on the aircraft floor, do not exceed any floor loading limitations.

5.7

(a) It is strongly recommended that duplicated catches are provided for means of retention for items which are habitually operated during flight, to allow for failure of one of the catches.

NOTE: In respect of galley equipment which is located in the vicinity of flight attendant seats, FAA Advisory Circular AC 25.785-1A (Flight Attendant Seat and Torso Restraint System Installations) paragraph 7b provides an acceptable means of compliance with FAR 25.785(j) (pre-amendment 25-72; the equivalent paragraph post amendment 25-72 is 25.785(h)(4)). This AC calls for additional restraint devices (dual latching or equivalent) for such equipment. In the case of aircraft certificated against JAR-25, there is currently no published advisory material but AC 25.785-1A is expected to be adopted by the JAA as an acceptable means of compliance with the identical JAR-25 requirements.

(b) Where retention of a unit into its stowage compartment is by turn catch, operating the catch should not release more than one unit.

5.8 Where catering trolleys have a facility for the collection of waste, they shall comply with the fire containment requirements of JAR 25.853(e) or BCAR Chapter D4-3, paragraph 6.4, as applicable.

5.9 Where the basis of type certification of the aircraft requires the provision of means of trolley restraint, in the passenger cabin, capable of withstanding the loads associated with the flight cases, the trolleys shall be provided with attachment means compatible with the anchorage points provided in the aircraft. Such methods of restraint should be engineered so that it can be used by one person and so that its use will be likely to occur by virtue of its simplicity of operation.

5.10 The trolleys must embody a brake system if they are to be removed from their stowage in flight. In the absence of evidence justifying an equivalent minimum braking force then the
braking mechanism must be qualified by loading the trolley to its maximum loaded weight and ensuring that the braking mechanism holds the trolley on an incline plane of 7.5°.

5.11 Trolleys shall carry placarded instructions:-
(a) That they must be stored and secured during take-off, turbulent weather and landing.
(b) That the gross weight of the unit, or the combined gross weight of the unit and any other galley insert when stowed together, must not exceed the placarded maximum content weight of the compartment where stowed.
(c) That when removed from their stowage they must not be left unattended.

5.12 The installation of all galley equipment shall be such that the size, weight, and means of restraint are compatible with the stowage facility provided, and that under design loads the item will not deform in such a manner so as to free itself from the means of restraint.

5.13 Account must be taken of the individual and total electrical power demand of galley equipment and an electrical load analysis must be included in design documentation.

6 CANCELLATION

This Notice cancels Airworthiness Notice No. 99, Issue 3 dated 15 March 1994, which should be destroyed.