



وزارة المواصلات

Ministry of Transportation

# **CIVIL AVIATION PUBLICATION**

## **CAP 03**

# **MAINTENANCE CERTIFICATION**

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## CIVIL AVIATION PUBLICATIONS

### CAP 03

## MAINTENANCE CERTIFICATION

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### Bahrain CAA Publication Revisions Highlight Sheet

CAP: 03                       TPM:   

The following pages have been revised to Revision 04 dated 30 November 2014.

Item	Page/Paragraph number	Remove	Insert	Reason
1.	INDEX	i	i	Pagination changes.
2.	Para. 2.2	2	2	Items (a) to (g) and (i), the word "should" is changed to "shall".
3.	Para. 2.3	3	3	Added 'Airworthiness Directives (ADs)' in item (j) plus items (i) and (ii).
4.	Para. 2.3	4	4	Added 'Wiring Diagram' as item (s) and re-numbered succeeding items.
5.	Para. 2.5	5	5	Added "Supplemental Type Certificates (STCs)" under item (b).
6.	Para. 2.6.2 to 2.6.3	6	6	The word "should" is changed to "shall".
7.	Para. 2.6.4, 2.6.5 and 3	7	7	The word "should" is changed to "shall".
8.	Para. 4.1	8	8	Added 'A valid Certificate of Registration' under item (b).
9.	Para. 5	9	9	Item (e), word "should" is changed to "shall".

**NOTE:** All references to "CAA" or "Bahrain CAA" have been changed to "BCAA", indicated with a change bar.

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### 1. INTRODUCTION

#### 1.1 General

ANTR Part V states that an aircraft shall not fly in or over Bahrain unless there is in force a certificate of airworthiness duly issued or rendered valid under the law of the country in which the aircraft is registered, and any conditions subject to which the certificate was issued or rendered valid are complied with. This process is called maintenance certification and includes the following;

- (a) Certificate of Airworthiness.
- (b) Certificate of Release to Service (Maintenance Release)
- (c) Certificate of Maintenance Review

The procedures in this CAP prescribe the actions necessary to issue and re-issue these Certificates. In addition the requirements for airworthiness flight tests and mandatory continuing airworthiness information has been included.

#### 1.2 References

The CAP makes reference to other publications, which may be more comprehensive than that contained in this procedure. Applicable sections of the following references should be reviewed;

- (a) ANTR Part V, Chapter 5;
- (b) ANTR M, Subpart I (Airworthiness Review Recommendation);
- (c) ANTR 145 (for CRS)
- (d) ANTR 21, Subpart H (C of A) and Subpart P (Permit to Fly)
- (e) CAP 16 - C of R

### 2. C of A INITIAL ISSUE

#### 2.1 Certification Process

The five basic essential elements for the certification process of the C of A are;

- (a) Application
- (b) Supporting Documents
- (c) Survey of Aircraft
- (d) Technical Records
- (e) Flight Test.

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### 2.2 Application Process

The initial issue of a Certificate of Airworthiness for an aircraft is dependent upon the aircraft being registered in the Kingdom of Bahrain. An application for the issue of a Certificate of Airworthiness must be submitted by the nominated Accountable Manager to the BCAA Director Aeronautical Licensing using Form ALD/AIR/F005. It is essential that the aircraft is either registered in Bahrain or an application for the registration of the aircraft has been submitted. (See CAP 16 - Registration).

In general, the procedures and directives developed by the BCAA for the issuance of a Certificate of Airworthiness cover the following requirements;

- (a) an application shall be completed and submitted to the BCAA (Form ALD/AIR/F005);
- (b) the applicant shall specify the design standards/airworthiness requirements according to which the type aircraft was certificated. The aircraft must have been Type Certificated to the ICAO Standard and that a Type Certificate Data Sheet (TCDS, as issued by the Authority of the State of Manufacture, is available for reference.
- (c) the applicant shall make the aircraft available, at a time and place acceptable to the BCAA for such checks and inspections considered necessary by the Inspector;
- (d) it shall be the responsibility of the applicant to provide personnel and equipment so that these checks and inspections may be satisfactorily carried out;
- (e) all relevant records of previously completed inspection, maintenance, flight test and calibration shall be made available for inspection;
- (f) all the work required to be done on the aircraft for the issue of a Certificate of Airworthiness shall be carried out under the supervision of an organisation approved by the BCAA.
- (g) all work shall be carried out in a proper manner and conform to the requirements, specifications, drawings and instructions related to the approved design of the subject aircraft; In particular;
  - (1) full particulars of the work done shall be entered in the appropriate log book and a maintenance release should be issued;
  - (2) when the particulars of the work done occupy so much space that it is not practical to record all details in the space provided in the log book, the details shall be entered in a separate maintenance record which shall be numbered for identification purposes, and certified in the same manner as that required for the relevant entry in the log book. The reference number of such record shall be entered in the log book, together with a brief description of the work to which the work relates; and
  - (3) have all maintenance carried out to comply with the approved maintenance programme in accordance with M.A.302.

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- (h) should the applicant need to carry out a flight test to prove satisfactory functioning of the avionics and the performance and handling qualities of the aircraft, the flight must be conducted in accordance with the manufacturer's test schedule, which must be acceptable to the BCAA; and
- (i) the organisation referred to at (f) shall provide a certification that the aircraft is fit to fly as far as be reasonably determined from inspections of the aircraft and its records and manuals, and that all applicable Airworthiness Directives and mandatory modifications and inspections of the State of Design have been carried out and/or certified to have been carried out.

### 2.3 Supporting Documents

The following documents shall be submitted with the application form;

- (a) Export C of A
- (b) Type Certificate and Type Data Sheet.
- (c) AOC/Authorisation
- (d) Noise Certificate.
- (e) Insurance Certificate.
- (f) Test Flight Reports (Production and Acceptance).
- (g) Weight & Balance Data.
- (h) Aircraft Specification.
- (i) Maintenance Cycle.
- (j) Modification Status; Airworthiness Directives (ADs).
  - (i) List of applicable ADs.
  - (ii) List of repetitive ADs.
- (k) Component Life.
- (l) Technical Log Books.
- (m) Particulars of organisation responsible for Maintenance of Aircraft and Maintenance Agreement.
- (n) MEL.
- (o) Previous Incident/Accident information, if any.
- (p) Compass Calibration.
- (q) Seat Configuration.



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- (r) Maintenance Manuals.
- (s) Wiring Diagram.
- (t) Structure Repair Manual.
- (u) Flight Manual (Refer to paragraph 2.6 below).
- (v) an airworthiness review recommendation issued in accordance with ANTR M.
- (w) Approvals; such as
  - (1) Performance based navigation (RNP, RNAV)
  - (2) RVSM
  - (3) MNPS
  - (4) ETOPs
- (x) Aircraft Survey Report
- (y) Electrical Load Analysis (see Note 2 below)
- (z) Receipt of payment of fees

*Note 1: Some of the above documents may have already been submitted as part of the AOC application.*

*Note 2: The main purpose of the Electrical Load Analysis (ELA) and Power Source Capacity analysis is to estimate the system capacity (including generating sources, converters, contactors, busbars etc.) needed to supply the worst-case combinations of electrical loads. This is achieved by evaluating the average demand and maximum demands under all of the applicable flight conditions. It is important to note that the Electrical Load Analysis is a 'living' document and as such should be maintained throughout the life of the aircraft to record changes to the connected loads, which may be added or removed by modification. The Electrical Load Analysis that is produced for Aircraft Type Certification should be used as the baseline document for any subsequent changes. Refer to UK CAA CAP 562 Leaflet 9-13 for information.*

### 2.4 Survey of Aircraft

The purpose of a survey is to establish that an aircraft complies with Bahrain airworthiness requirements and standards and is, therefore, acceptable for the issue of a C of A. The extent of the survey will depend on the circumstances, having given due consideration to the origin and history of the aircraft and as influenced by the knowledge of the competence and reliability of the engineering staff concerned and the general standards of workmanship and airworthiness standards normally achieved by the organisation involved. The survey would be conducted at no cost to the BCAA.

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### 2.5 Technical Records

During the survey of the aircraft the following technical records must be available for inspection;

- (a) Aircraft Details;
- (b) Survey Report Compliance Statement
  - Mandatory Modifications and Inspections (for aircraft, engines, propellers and equipment)
  - Airworthiness Directives (for aircraft, engines, propeller and equipment)
  - Scheduled Maintenance and Component Life Limits
  - Conformance to the TCDS.
  - Supplemental Type Certificates (STCs)
- (c) Log Books;
- (d) Radio Installation Licence;

### 2.6 Airworthiness Flight Test

#### 2.6.1 General

General airworthiness flight tests, as distinguished from type certification flights, are generally required for;

- (a) aircraft under investigation for the issue of a Certificate of Airworthiness which have previously been issued with a Certificate of Airworthiness by a Contracting State;
- (b) aircraft being flown for an airworthiness test flight when required by the BCAA for renewal of the Certificate of Airworthiness.
- (c) aircraft under investigation for the approval of modification incorporated after the issue of a Certificate of Airworthiness.

*Note: If the C of A has been cancelled a Permit for Flight may be required to be issued prior to flight testing of aircraft.*

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### 2.6.2 Flight Test Schedule for Initial Issue of C of A

When an application is made for the issuance of an initial Certificate of Airworthiness, production and acceptance flight tests shall have already been completed in accordance with the manufacturer's flight test schedule to establish compliance with the airworthiness requirements of the originating State. The BCAA will normally accept these flight tests. However in certain circumstances the BCAA may require special flight tests to be carried out to determine conformity with the airworthiness regulations. If this procedure is necessary, the applicant shall arrange for the tests to be conducted by personnel acceptable to the BCAA and;

- (a) the flight test schedules for the special test shall be prepared by the applicant and shall require the acceptance of the BCAA.
- (b) the applicant shall submit the results of the special tests in a flight test report acceptable to the BCAA.

### 2.6.3 Flight Test Schedule for Renewal of C of A

At the discretion of the BCAA;

- (a) a specific flight test may not be required depending on the aircraft and the operator.
- (b) schedule service operators with 5 or more aircraft, may be permitted to conduct periodic test schedules or sampling in lieu of a specific test flight.
- (c) a specific flight test shall be required. For example, aircraft that have been in storage, or out of service for a prolonged period of time, will not have been subject to the periodic continuing airworthiness requirements and will need their airworthiness status to be re-established prior to entry into service.

These flight tests are required to ensure that the aircraft flight characteristics and the functioning in flight of the aircraft do not differ significantly from the normal performance for the type.

Should the BCAA require a Flight test for the renewal of a Certificate of Airworthiness it must be conducted in accordance with an airworthiness flight test schedule prepared for the aircraft type by the manufacturer and approved by the BCAA. Flight performance shall be checked against the appropriate sections of the flight manual, which is fully amended to current standards.

At the conclusion of an airworthiness flight test in connection with renewal of the Certificate of Airworthiness, the test report shall be prepared in a manner acceptable to the BCAA and shall include the results of tests specified in the airworthiness flight test schedule, including a Statement of observed performance versus flight manual performance for the same configuration and atmospheric conditions. Airworthiness flight test reports shall be submitted to the BCAA.

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### 2.6.4 Flight Test Schedule after Modification

If, in the opinion of the BCAA, a modification is likely to affect the flight characteristics, performance or functioning in flight of the aircraft, the BCAA may decide that special flight tests are required. If so decided, the flight test schedule shall include;

- (a) tests necessary to establish compliance with the appropriate airworthiness requirements. In particular cases other tests, not confined to flight tests, may be necessary to prove that the modification has not adversely affected the airworthiness requirements; and
- (b) flight tests necessary to provide information for inclusion in the Flight Manual, and other documents associated with the Certificate of Airworthiness.

At the conclusion of a flight test, a flight test report shall be prepared in an approved form, which shall include the results of the tests specified in the flight test schedule for the aircraft concerned. Flight test reports shall be submitted to the BCAA for review.

### 2.6.5 Flight Test Personnel

The airworthiness flight tests specified above must only be carried out by pilots and crew approved for the purpose by the BCAA. Pilots shall be appropriately licensed for the particular type of aircraft concerned and competent to conduct the tests laid down in the airworthiness flight test schedule. Except where the BCAA requires additional crew to be carried for a particular airworthiness flight test, the number of persons conducting the test shall be confined to the flight crew specified in the flight manual and engineers required to observe and report.

## 3. VALIDITY OF C OF A

A Certificate of Airworthiness issued by the BCAA specifies the period of validity of one year. It shall, however, cease to be valid if the aircraft, or such of its equipment as is necessary for the airworthiness of the aircraft, is overhauled, repaired, modified or if any part of the aircraft or such equipment is removed or is replaced in a manner, and with material of a type which has not been approved by the BCAA either generally, or in relation to a class of aircraft or to the particular aircraft.

The Certificate of Airworthiness shall also cease to be valid until completion of required inspection of the aircraft, or any components which are considered by the BCAA to be necessary for the purpose of ascertaining whether the aircraft remains airworthy, or until completion to the satisfaction of the BCAA of any modifications of the aircraft or its components considered necessary by the BCAA for the purpose of ensuring the airworthiness of the aircraft. It shall remain valid subject to:

- (a) Compliance with the applicable type-design and continuing airworthiness requirements; and
- (b) The aircraft remaining on the BCAA register; and
- (c) The type-certificate under which it is issued not being previously invalidated.

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- (d) The certificate not being surrendered or revoked.

### 4. RENEWAL

#### 4.1 Renewal Process

The process is essentially the same for the initial issue except for the extent of the review of supporting documents and technical records as well as the extent of the aircraft survey. The C of A may be renewed before the expiry of the current period without loss of validity if the period between the completed inspection and the expiry date entered on the C of A is not more than 30 days. This period of 30 days may be anticipated by the operator/organisation.

The five basic essential elements for the renewal process of the C of A are;

(a) Application

An application for the renewal of a Certificate of Airworthiness must be made using Form ALD/AIR/F005 and may be submitted by the postholder or Quality Manager within 30 days of the expiry date.

(b) Supporting Documents

At least the following documents must be submitted;

- A copy of the expiring C of A;
- C of A Renewal Survey Report - Form ALD/AIR/F006;
- Flight Test Report (if conducted);
- Weight Schedule (if new or amended);
- A valid Certificate of Registration.

(c) Airworthiness review recommendation issued in accordance with ANTR M.

(d) Check of Technical Records

#### 4.2 Airworthiness Review Recommendation

To ensure the validity of the aircraft airworthiness certificate an airworthiness review of the aircraft and its continuing airworthiness records must be carried out annually.

*Note: Refer to ANTR M, Subpart I.*

The Certificate of Airworthiness (C of A) is renewed by the BCAA on the basis of a recommendation submitted by an approved Continuing Airworthiness Management Organisation under ANTR M.A, Subpart I. Any continuing airworthiness management organisation, if appropriately approved, after performing an airworthiness review in accordance with ANTR M.A.710 may issue an airworthiness review recommendation to

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BCAA for the renewal of the C of A. Issuance can only be made provided there is no evidence or reason to believe that the aircraft is not airworthy.

### 5. EXTENSION OF C of A

In some circumstances the C of A can be extended for a certain period of time due to operational or maintenance reasons. In this case the following action is to be taken:

- (a) The organisation/operator shall submit a letter to the BCAA requesting an extension of a specific period and specifying the reason for such extension.
- (b) The applicant must confirm that all mandatory requirements have been complied with.
- (c) The C of A must be current with continuous airworthiness control prior to the extension.
- (d) The extension shall be limited to a maximum of one month.
- (e) The annual charge for the C of A includes the extension period; therefore, the total validity period shall not exceed twelve months including the extension. E.g. if the extension were granted for one calendar month, then on renewal of the C of A the validity dates would be for the remaining 11 months of the twelve month renewable period.

### 6. SUSPENSION OF C of A

A C of A shall be automatically suspended when it has come to the notice of the BCAA that the aircraft has been involved in, and incurred damage as a result of an accident, as defined in the ANTR Part VI. The C of A may be reinstated at the discretion of the BCAA.

### 7. CERTIFICATE OF MAINTENANCE REVIEW

#### 7.1 Requirement

It is a BCAA requirement that an aircraft shall not fly unless:

- (a) the aircraft (including in particular its engines), together with its equipment and radio station, is maintained in accordance with an approved maintenance schedule in relation to that aircraft; and
- (b) There is in force a certificate of maintenance review (CMR) issued in respect of the aircraft.

For this purpose a Certificate of Maintenance Review (CMR) must be carried out and certified at intervals not exceeding 4 calendar months. The certificate shall certify the date on which the maintenance review was carried out and the date thereafter when the next review is due.

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### 7.2 Maintenance Schedule Endorsement

The approved maintenance schedule issued by the BCAA contains an endorsement specifying the occasions on which a review must be carried out for the purpose of issuing a certificate of maintenance review. The Certificate may be reissued at any time prior to the expiry of the last certificate. The review need not be completed co-incident with a Scheduled Maintenance Inspection.

### 7.3 Issuing Authority

The signatory for the CMR shall be nominated by the approved organisation.

### 7.4 Issuance Criteria

The nominated Signatory shall only issue a Certificate of Maintenance Review when satisfied at the time of the review that the following aspects of maintenance have been carried out:

- (a) A completion of all inspections and other maintenance requirements of the Approved Maintenance Programme.
- (b) Accomplishment of all applicable terminating or recurring Airworthiness Directives and mandatory Service Bulletins, modifications or inspections.
- (c) No parts, components or assemblies exceed their life/service limits.
- (d) No outstanding defects or inoperative items exist, or if any, have been deferred in accordance with procedures acceptable or approved by the BCAA.
- (e) No known condition(s) exists that would adversely affect the aircraft airworthiness, safe operation, or endanger passengers or crew members.
- (f) Certificates of Release to Service (CRS) have been issued;

- Notes:*
- (1) *Statements to confirm items a) to e) above must be kept on file with each CMR*
  - (2) *The time intervals for the Certificate of Maintenance Review will be specified on a calendar `not exceed' basis and therefore, it is not necessarily intended to align with any check.*
  - (3) *The Certificate of Maintenance Review requires only one signature.*
  - (4) *One copy of the CMR is to be carried in the aircraft and another copy retained with the aircraft records on ground.*

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### 7.5 Format

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

**CERTIFICATE OF MAINTENANCE REVIEW**

AIRCRAFT TYPE: \_\_\_\_\_

NATIONALITY & REGISTRATION MARK: \_\_\_\_\_

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

The next maintenance review is due \_\_\_\_\_

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Authorisation. \_\_\_\_\_

Organisation \_\_\_\_\_

### 7.6 Administration

A certificate of maintenance review shall be issued in duplicate. One copy of the most recently issued certificate shall be carried in the aircraft and the other shall be kept by the operator under the control of the Maintenance postholder.

Each certificate of maintenance review shall be preserved by the operator of the aircraft for a period of 2 years after it has been issued.

## 8. CERTIFICATE OF RELEASE TO SERVICE

A Certificate of Release to Service shall be issued in accordance with ANTR 145.A.50 (Certification of Maintenance), after overhauls, repairs, replacements, modifications and mandatory inspections have been carried out.

The Certificate of Release to Service shall contain particulars of work done or the inspection completed and place at which the work was carried out. Depending upon the application of the certificate, details of the aircraft type, registration, component type, part number and serial number shall be recorded as applicable. The certification should be worded in the following manner:

“(certifies that) The work recorded has been carried out in accordance with the requirement of the Kingdom of Bahrain, Civil Aviation Law for the time being in force, and in that respect the aircraft/equipment is considered fit for release to service”

Signature:.....



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Authorisation: .....

Date: .....

*Note: Refer to ANTR 145.A.50 and associated AMCs for requirements and additional guidance.*

### 9. MANDATORY CONTINUING AIRWORTHINESS INFORMATION

#### 9.1 General

When an aircraft has been entered on the Bahraini register, the BCAA establishes communications with the State of Design/Manufacturer with regard to the receipt, adoption and implementation of the mandatory continuing airworthiness information. This includes all information, in particular Airworthiness Directives (ADs), Service Bulletins (SBs), etc., issued by the type certification authority, the manufacturer, or by the airworthiness authority of any other State in which the same type of aircraft are registered, particularly where such information pertains to the continuing airworthiness and the provision of recurring defects in aircraft and its components and equipment.

The State of Design/Manufacture will transmit any generally applicable information which it has found necessary for the continuing airworthiness of an aircraft and for the safe operation of the aircraft. This information called, mandatory airworthiness information, is intended to include mandatory requirements for modification, replacement of parts, or inspection of aircraft and amendment of operating limitations and procedures.

Among such information are the Airworthiness Directives.

BCAA adopts the mandatory continuing airworthiness information, in the form of airworthiness directives, service bulletins, service letters or in any format. The operator/organisation is responsible for implementation,

#### 9.2 Operator Responsibility

Operators are required to establish a system for monitoring mandatory continuing airworthiness information, and ensure that all mandatory requirements are accomplished and duly recorded in the mandatory log books/records.