CIVIL AVIATION AUTHORITY OF NEPAL

AIRWORTHINESS INSPECTOR HANDBOOK

ISSUE 4
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(Part I: Procedures)
Foreword

The Airworthiness Inspector's Handbook third edition December, 2013 has been developed taking into consideration all necessary procedures and checklists required for discharging the duties and responsibilities of Airworthiness Inspector. This edition of handbook is formulated on the basis of NCAR provisions and other requirements related with airworthiness of aircraft.

Airworthiness Inspectors shall follow the procedures and checklist contained in the handbook making the jobs performed by them uniform and efficient. This handbook contains various procedures and checklists.

This issue of Airworthiness Inspector Handbook Part-I comes into force with effect from December 2013.

Ratish Chandra Lal Suman
Director General
Civil Aviation Authority of Nepal
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Procedure for Amendment of Airworthiness Inspector Handbook

Introduction
This Airworthiness Inspector handbook will be reviewed annually in the month of December by the Airworthiness Inspection Division to ensure that its content remain accurate as per the requirements. The approval procedure for proposed changes which will be identified during review will be as per process described below.

Procedure
Any Person/Inspector who recognizes a need for change may initiate amendments. The proposed change will be dealt in accordance with following Procedure.

1. Identify a change that would improve the efficiency and effectiveness of the procedure.
2. Schedule an internal meeting within Airworthiness Inspection division. The meeting will be chaired by Chief of Airworthiness and all the inspectors.
3. Review the proposed change with applicable Rules, Regulations and Annex for compliance.
4. After verifying the compliance, draft the proposed change including comments and suggestions from all the inspectors. The discussions in the meeting will be minuted.
5. Forward proposed amendment to Chief of Flight Safety Standards Department for review and Comment.
6. If found Satisfactory, Chief FSSD will forward Proposed draft to DDG for review and Comment. If not, return to Airworthiness Inspection Division with Comment for necessary action.
7. If found Satisfactory, DDG will forward Proposed Draft to DG for review and Comment. If not, return to Chief FSSD and subsequent to Airworthiness Inspection Division with Comment for necessary action.
8. If found Satisfactory, DG takes final decision and endorses the proposed draft. If not, returns the Proposed draft to DDG, FSSD and Airworthiness Inspection Division with Comment for necessary action.
9. The approved document will be distributed to all the inspectors through librarian along with internal circular for implementing new procedure.
10. A receipt of the approved document is ensured by signing the document by all the inspectors, record of which is kept with librarian.
10. It is the responsibility of the Individual Inspectors to update their Airworthiness Inspector handbook with the new document received through librarian.
Method to keep currency of Airworthiness Inspector handbook

This Airworthiness Inspector handbook will be reviewed annually in the month of December by the Airworthiness Inspection Division to ensure that its content remain accurate as per the requirements. The approval procedure for proposed changes which will be identified during review will be as per process described above.
Chapter 1

Introduction to the concept of Continuing Airworthiness

Note - General information on the continuing airworthiness procedures followed in individual ICAO Contracting States is published in ICAO Circular 95 - The Continuing Airworthiness of Aircraft in Service.

1. Continuing airworthiness covers all of the processes ensuring that, at any time in their operating life, all aircraft comply with the airworthiness requirements in force and are in a condition for safe operation.

2. It includes, under the control of the respective Civil Aviation Authorities of the State of Design and the State of Registry;

   a) design criteria which provide the necessary accessibility for inspection and permit the use of established processes and practices for the accomplishment of maintenance;

   b) preparation by the organization responsible for the type design of the specifications, methods, procedures and tasks necessary to maintain the aircraft and publication of this information in a format that can be readily adapted for use by an operator;

   c) adoption by the operator of specifications, methods, procedures and tasks, using the information provided by the organization responsible for the type design and preparing that material in the form of a maintenance programme suitable for its operation;

   d) the reporting of defects and other significant maintenance and operational information by the operator to the organization responsible for the type design in accordance with the requirements of the State of Registry;

   e) the analysis of defect, accident and other maintenance and operational information by the organization responsible for the type design, the State of Design and the State of Registry and the initiation and transmission of information and recommended or mandatory action to be taken in response to that analysis;

   f) consideration of, and, as deemed appropriate by the operator or the State of Registry, action on the information provided by the organization responsible for the type design or the State of Design, with particular emphasis on action designated as "mandatory";

   g) accomplishment by the operator of all mandatory requirements concerning the aircraft with particular reference to fatigue life limits and any special tests or inspections required by the certification process or subsequently found necessary to ensure structural integrity; and

   h) preparation of and compliance with Supplemental Structural Inspection Programmes and subsequent requirements related to ageing aircraft.
Chapter 2
Modifications & Repairs

2.1 INTRODUCTION

2.1.1 Annex 6, Part 1, Para 8.6 states:
"All modifications and repairs shall be shown to comply with airworthiness requirements acceptable to the State of Registry. Procedures shall be established to ensure that the substantiating data supporting compliance with the airworthiness requirements are retained".

2.1.2 The objective of this chapter is to assist national airworthiness authorities to provide guidance to aircraft operators, organizations responsible for the type design and modification and repair organizations by setting out acceptable means for showing that modifications and repairs to aircraft comply with appropriate airworthiness requirements. Guidance is also provided concerning acceptable procedures for retention of substantiating data supporting compliance with the airworthiness requirements.

2.1.3 The information in this chapter is intended to apply to all types and masses of aircraft for which a type certificate (or equivalent document) has been issued and includes all components of the aircraft such as engines, propellers and equipments.

2.2. BASIC CONSIDERATIONS

2.2.1 A modification or repair to an aircraft should be accomplished in accordance with design data approved by, or on behalf of, or accepted by the airworthiness authority of the State of Registry such that the modification or repair design conforms to applicable standards of airworthiness.

2.2.3 Terminology
Throughout this chapter "alteration" and "modification" are intended to be synonymous. Guidance is presented in the Appendix to this chapter to assist in determining whether a particular modification or repair is major or minor.

1. Modification
A modification to an aeronautical product means a change to the type design which is not a repair.

a) Major- A major modification means a type design change not listed in the aircraft, aircraft engine or propeller specifications:

1) that might appreciably affect the mass and balance limits, structural strength, performance, powerplant operation, flight characteristics or other qualities affecting airworthiness or environmental characteristics; or
2) that will be embodied in the product according to non-standard practices.

b) **Minor**- A minor modification means a modification other than a major modification.

*Note*- Some states use the term “alteration” instead of modification. Throughout this chapter alteration and modification are intended to be synonymous.

**2. Repair**

A repair to an aeronautical product means a design change intended to restore it to an airworthy condition after it has been damaged or subjected to wear.

a) **Major**- A major repair means a design change which is intended to restore an aeronautical product to an airworthy condition:

1) where the damage being repaired might appreciably affect the structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness or environmental characteristics; or

2) that will be embodied in the product using nonstandard practices.

b) **Minor**- A minor repair means a repair other than a major repair. Guidance is presented in the Appendix to this Chapter to assist in determining whether a particular modification or repair is major or minor.

**3. Approved data**

Data that can be used to substantiate major repairs/major modifications, derived from (but not limited to) the following:

* Type Certificate Data Sheets
* Supplemental Type Certificate (STC) data, provided that it specifically applies to the item being repaired/altered
* Airworthiness Directives (AD)
* Airframe, engine, and propeller manufacturer’s "State of design-approved" maintenance manuals or instructions.
* Component manufacturer's manuals or instruction, unless specifically not approved by the Director General or resulting in an alteration to the airframe, engine, and/or propeller
* Major Repair or Modification/Alteration form, when the specified data has been previously approved
* Structure Repair Manuals (SRM), only as a source of approved data for a major repair, when it is a State of Design-approved document. Data that is contained in the SRM which is not approved, can be used on a case-by-case basis if prior CAA approval is granted for that repair.
* Repair data, issued by a CAA delegated engineering authority holder,
* Foreign bulletins, for use on locally certificated foreign aircraft, when approved by the foreign authority

* Service bulletins and letters or similar documents which are specifically approved by the Director (under a TSO, PMA, or other type-certificated basis)

* Foreign bulletins as applied to use on a locally certificated product made by a foreign manufacturer who is located within a country with whom a bilateral agreement is in place and by letter of specific authorization issued by the foreign civil air authority

* Other data approved by the Director General

* FAA Advisory Circular 43.13-1, Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair, as amended

**NOTE:** AC 43.13-1, as amended, may be used as approved data, only if the following three prerequisites are met:

a) The user has determined that it is appropriate to the product being repaired/ altered

b) The user has determined that it is directly applicable to the repair/ alteration being made

c) The user has determined that it is not contrary to manufacturer’s data.

### 2.2.4 Approval Procedure

a) Check that the application is signed by authorized personnel (QA Chief, Engineering Director or equivalent post holders).

b) Ensure that all the requirements laid down in NCAR chapter C.5 have been met.

c) Ensure that all the supporting documents (Copy of approved data as mentioned above, Modification/ Repair plan, Modification/ Repair Scheme, Supporting Drawings) are attached in form and manner acceptable to CAA Nepal.

d) Verifying all the documents, by filling up Checklist for Approval of Modification and Repair.

e) If found satisfactory, forward the internal office memo to superior officer. If not, contact the Operator for additional information/ Documents.

f) Once approved by Director General, issue a letter stating that the proposed Modification/ Repair has been approved.
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1. GENERAL

The following criteria outline the decisions needed in assessing a modification or repair as major or minor. For each issue, it must be determined whether or not the proposed change will have other than a negligible effect. The questions require "yes" or "no" responses. An affirmative answer to any individual question indicates that the modification or repair should be classified as major. The examples and tests listed are for illustration only and not intended to be all-encompassing.

2. CRITERIA

2.1 General

Is the change being accomplished as an alternative means of compliance with an airworthiness directive or equivalent.

2.2 Mass and balance

a) Does the change involve a revision in the approved mass limitations or centre of gravity range limits?

b) Does the change require the installation of ballast or other methods to maintain the centre of gravity within the approved limits?

2.3 Performance and flight characteristics

Does the change involve alterations to the configuration of the aircraft which may:

a) increase drag;

b) alter the thrust or power;

c) affect stability or controllability;

d) induce flutter or vibration; or

e) alter the stalling characteristics to an extent which necessitates analysis or test?

2.4 Structural strength

a) Does the change involve a principal component of the aircraft structure such as a frame, stringer, rib, spar or stressed skin?

b) Does the change involve a structural element which is addressed as part of a damage tolerance or fatigue/failsafe evaluation?

c) Is a pressure vessel penetration or change involved?

d) Does the change involve the installation of an item of mass necessitating structural re-evaluation?

e) Does the change involve the installation or alteration of a containment or
restraint system intended for the stowage of items of significant mass?

f) Does the change involve repairs or modifications to the load-bearing structure of seats, harnesses or their means of attachment or any other occupant restraint equipment?

g) Does the change involve the substitution of materials?

2.5 Powerplant operation

Does the change significantly affect the powerplant or propeller or their accessories?

2.6 Other qualities affecting airworthiness

a) Does the change involve equipment for which there is no performance standard which has been approved or accepted by the airworthiness authority?

b) Does the change affect the probability of failure conditions which could impair or preclude continued safe flight or landing?

c) Does the change affect the pilot's visibility or impair the pilot's capability to control the aircraft?

d) Does the change involve alterations to the interior arrangement or cabin materials?

e) Does the change involve Systems for cabin pressurization or the provision of breathing oxygen?

f) Does the change involve flight controls or an autopilot?

g) Does the change involve critical or essential components of the electrical system such as generators, alternators, inverters, batteries, distribution busses, or bus protection and control devices?

h) Does the change affect instruments, indicators or their subsystems which provide navigation information?

i) Does the change affect instruments, indicators or their subsystems which provide essential or critical information concerning the aircraft status?

j) Does the change affect a regulated placard?

k) Does the change affect any approved information contained in the flight manual or equivalent document?

2.7 Other qualities affecting environmental characteristics

Does the change alter the aircraft noise or emission characteristics?

2.8 Non-standard practices

Does the change involve practices or techniques which are novel or unproven in the proposed application?
3.1. OBJECTIVE

The guidance material in this chapter is intended to assist CAA, Nepal in fulfilling their obligations under Annex 8, in relation to the continuing validity/renewal of Certificates of Airworthiness. Annex 8, Part II, specifies that a Certificate of Airworthiness shall be renewed or shall remain valid, subject to the laws of the State of Registry, provided that the continuing airworthiness of the aircraft shall be determined by a periodical inspection at appropriate intervals having regard to lapse of time and service or, alternatively, by means of a system of inspection approved by the State which will produce at least an equivalent result.

3.2. The practice of most Contracting States is to control the validity of Certificates of Airworthiness in one of two ways.

a) the issue of a Certificate of Airworthiness with a non-expiring period of validity, continuing airworthiness being determined through a system of inspection approved by the State; or

b) the issue of a Certificate of Airworthiness with a predetermined period of validity which can be renewed. The periods of time concerned are commonly between one and three years. Renewal is subject to a determination of continuing airworthiness by the regulatory authority of the State concerned.

However, CAA Nepal issues/validates C of A for the period of one year.

3.3. Although of no direct relevance in a continuing airworthiness context, it is the practice of some States to make the continuing validity of a Certificate of Airworthiness subject to a condition that the aircraft remains on the register of the State concerned.

3.4. TECHNICAL AND ADMINISTRATIVE REQUIREMENTS

Regardless of the procedure adopted by States in determining the continuing validity of Certificates of Airworthiness, the continuing airworthiness of an aircraft at any point in time is based on compliance with the requirements that follow. References to "aircraft" should be interpreted to include the structure, systems, components, instruments, equipment and power-units. It is required that:

a) the aircraft remains in conformity with the type design approved by the State of Registry; any modifications or repairs have been completed in accordance with procedures and methods approved by the State of Registry, any replacement components, parts, equipment or material are in accordance with the design requirements, having been obtained from sources acceptable to the State of Registry and installed in accordance with any procedures which have been prescribed by the State,

b) 1) the aircraft has been serviced and maintained to a programme approved by the State of Registry in accordance with any methods and procedures which the State may have prescribed or approved.
2) If the aircraft is the subject of a reliability programme, including in particular engine trend monitoring, corrective action has been instituted to rectify any adverse trends:

3) Any certification maintenance requirements have been complied with at the prescribed intervals;

**Note** - As part of the type certification process of a modern transport aircraft, system safety maintenance tasks, known as Certification Maintenance Requirements (CMR), may have been identified. Such tasks, and their associated intervals, limit the exposure time to significant latent failures that would, in combination with one or more events identified in a numerically based safety analysis, result in catastrophic failure conditions. No change to the content or frequency of these tasks should be approved without the agreement of the State of Design. Further guidance on CMR is provided in other parts of this manual.

c) All modifications or inspections declared mandatory by CAA Nepal and State of Registry (commonly referred to as airworthiness directives) have been complied with. With regard to inspections, this includes both inspections which require a one-time action and those with repetitive content;

**Note** - The responsibilities of States of Registry in relation to continuing airworthiness requirements of this nature are contained in ICAO Annex 8.

d) Any parts of the aircraft that have an ultimate service life limit declared by the organization responsible for the type design or the State of Registry have not exceeded their approved lives;

**Note** - Aircraft maintenance manuals prepared in the format required by the Air Transport Association of America Specification Number 100 (ATA 100), contain this information in Chapter 5. For some older aircraft types, this information may sometimes be published in the Flight Manual or Type Certificate Data Sheet.

e) If the aircraft has been released to service with any airworthiness significant systems, components or equipments unserviceable, this is in compliance with a Minimum Equipment List or similar document approved by the State of Registry;

f) If the aircraft has been released into service with any structural parts missing, this is in compliance with procedures approved by CAA Nepal;

**Note** - Information of this nature is sometimes included as a Configuration Deviation List in the flight manual.

g) All minor unrepaired damage is within limits acceptable to CAA Nepal. Reference should be made to the structural repair manual for the aircraft type concerned to determine acceptable limits;

h) All markings and placards included in the approval of the type design by CAA Nepal are present;

i) The aircraft mass and balance data is in conformity with the requirements of CAA Nepal, including reweighing if appropriate and/or compliance with a system for recording progressive mass and balance change;

j) For those States who include operational equipment, e.g. flight recorders, in their national requirements for the continuing validity of Certificates of Airworthiness, the equipment is serviceable. Any operational equipment installed for a particular type of operation should have an approval status acceptable to the State of the Operator,
be installed in a manner acceptable to that State and be in a serviceable condition;

k) the aircraft records are in conformity with the requirements of CAA Nepal,

l) in addition to the information specified in Annex 8, the flight manual includes any changes made mandatory by CAA Nepal as required by Annex 6, Part I.
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Chapter 4
Approve a Reliability Program

4.1  OBJECTIVE

This chapter provides guidance for approving airline reliability programs and providing technical assistance to the certificate holder.

4.2  GENERAL

A. This task is performed by the Airworthiness Inspectors (AWI) and needs to be closely coordinated between both the maintenance and avionics specialities. Approving a reliability program is one of the most complex duties of an Airworthiness Inspector and special attention must be given to every element of the proposed program.

B. Reliability programs establish the time limitations or standards for determining intervals between overhauls, inspections, and checks of airframes, engines, propellers, appliances and emergency equipment. Guidance on the program elements is listed in FAA Advisory Circular (AC) 120-17, Maintenance Program Management through Reliability Methods, as amended, the Airline/Manufacturer Maintenance Program Planning Document, MSG-2/3, and/or Maintenance Tasks. It is important that the AWI explains all of the program requirements to the operator/applicant.

4.3  PRIMARY MAINTENANCE PROCESSES

A. MSG-2, Primary Maintenance Processes Definitions:

1. Hard Time (HT), Overhaul Time Limit or Part Life-Limit. This is a preventive primary maintenance process that requires a system, component, or appliance is either overhauled periodically (time limits) or removed from service (life limit). Time limits may only be adjusted based on operating experience or tests, in accordance with procedures in the operator's approved reliability program.

2. On Condition (OC). This is also a preventive primary maintenance process that requires a system, component appliance be inspected periodically or checked against some appropriate physical standard to determine if it can continue in service. The standard ensures that the unit is removed from service before failure during normal operation. These standards may be adjusted based on operating experience or tests, as appropriate, in accordance with a carrier's approved reliability program or maintenance manual.

3. Condition Monitoring (CM). MSG-2 introduced condition monitoring. This process is for systems, components, or appliances that have neither HT nor OC maintenance as their primary maintenance process. It is accomplished by appropriate means available to an operator for finding and solving problem areas. The user must control the reliability of systems or equipment based on knowledge gained by analysis of failures or other indications of deterioration.
B. MSG-3, Maintenance Task Definitions:

(1) Lubrication/Servicing (LU/SV): Any act of lubrication or servicing for the purpose of maintaining inherent design capabilities. The replenishment of the consumable must reduce the rate of functional deterioration.

(2) Operational/Visual Check (OP/VC): Hidden functional failure categories. An operational check is a task to determine if an item is fulfilling its intended purpose. The check does not require quantitative tolerances, but is a failure finding task. A visual check is an observation to determine that an item is fulfilling its intended purpose and does not require quantitative tolerances. This is a failure finding task that ensures an adequate availability of the hidden function, to reduce the risk of a multiple safety failures, and to avoid economic effects of multiple failures and be cost-effective.

(3) Inspection/Functional Check (IN/FC), all categories.

(a) Inspections:

- Detailed inspection: An intensive visual examination of a specific structural area, system, installation or assembly to detect damage, failure, or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate by the AWI. Inspection aids such as mirrors, magnifying lenses, etc., may be used. Surface cleaning and elaborate access procedures may be required.

- General visual (surveillance) inspection: A visual examination of an interior or exterior area, installation, or assembly to detect obvious damage, failure or irregularity. This level of inspection is made under normally available lighting conditions, such as daylight, hangar lighting, flashlight, or drop-light and may require removal or opening of access panels or doors. Stands, ladders, or platforms may be required to gain proximity to the area being checked.

- Special detailed inspection: An intensive examination of a specific item(s), installation, or assembly to detect damage, failure or irregularity. The examination is likely to make extensive use of specialized inspection techniques and/or equipment. Intricate cleaning and substantial access or disassembly procedures may be required.

(b) Functional check: A quantitative check to determine if one or more functions of an item perform within specified limits. Reduced resistance to failure must be detectable, and there must be a reasonably consistent interval between a deterioration condition and functional failure.

(4) Restoration (RS), all categories: That work necessary to return an item to a specific standard. Since restoration may vary from cleaning or replacement of single parts to a complete overhaul, the scope of each assigned restoration task has to be specified.

(5) Discard (DS), all categories: The removal from service of an item at a specified life limit. Discard tasks are normally applied to so-called single celled parts such as cartridges, canisters, cylinders, engine disks, safe-life structural
4.4 NEW AIRCRAFT

The lack of real experience with new aircraft requires a careful, detailed study of their characteristics to determine which components or systems would probably benefit from scheduled maintenance (HT or OC).

A. The initial maintenance programs for the B-747, DC-10, and L-1011 aircraft were developed by special teams of industry and Federal Aviation Administration (FAA) personnel. Using the MSG-2 decision analysis, these teams identified potential tasks and determined which maintenance tasks must be performed to ensure operating safety or determine essential hidden function protection. The remaining tasks were evaluated to determine if they were economically useful.

B. This evaluation provided a systematic review of the aircraft design so that, in the absence of real experience, the best maintenance process can be employed for each component or system. The B-747, DC-10, and L-1011 aircraft operating experience confirmed the effectiveness of these procedures.

4.5 DATA COLLECTION SYSTEM

A. Typical sources of data collection include the following:
   * Unscheduled removals
   * Confirmed failures
   * Pilot reports
   * Sampling inspections
   * Shop findings
   * Functional checks
   * Bench checks
   * Service difficulty reports
   * Mechanical interruption summaries
   * Other sources the operator considers appropriate

B. Not all of these sources may necessarily be covered in each and every program. However, the availability of additional information provides the operator with a span of invaluable operating history for determining success or failure in meeting program goals.

C. Data collected must be accurate and factual to support a high degree of confidence for any derived conclusion. It must be obtained from units functioning under operational conditions and must relate directly to the established levels of performance.
4.6 DATA ANALYSIS AND THE APPLICATION TO MAINTENANCE CONTROLS

The objective of data analysis is to recognize the need for corrective action, establish what corrective action is needed, and determine the effectiveness of that action.

A. Data Analysis Systems: Data analysis is the process of evaluating mechanical performance data to identify characteristics indicating a need for program adjustment, revising maintenance practices, improving (modifying) hardware, etc. The first step in analysis is to compare or measure data against acceptable performance levels. The standard may be a running average, tabulation of removal rates for past periods, graphs, charts, or any other means of depicting a "norm".

B. Programs Incorporating Statistical Performance Standards ("Alert" Programs)

(1) Reliability programs developed under Advisory Circular 120-17, as amended and earlier criteria use parameters for reliability analysis such as delays per 100 departures for an aircraft system. They incorporate performance standards as described in paragraph 15 of this section. These standards define acceptable performance.

(2) System performance data usually is reinforced by component removal or confirmed failure data. The condition monitored process can be readily accommodated by this type of program.

C. Programs Using Other Analysis Standards ("Non alert" Programs). Data compiled to assist in the day to day operation of the maintenance program may be used effectively as a basis for continuous mechanical performance analysis.

(1) Mechanical interruption summaries, flight record review, engine monitoring reports, incident reports, and engine and component analysis reports are examples of the types of information suitable for this monitoring method. The number and range of inputs must be sufficient to provide a basis for analysis equivalent to the statistical standard programs.

(2) Actuarial analysis should be conducted periodically to ensure that current process classifications are correct.

4.7 PERFORMANCE STANDARDS

A. The following factors are acceptable for establishing or revising a reliability program's performance standards:

(1) Past and present individual operator and industry experience. If industry experience is used, the program must include a provision for reviewing the standard after the operator has gained 1 year of operating experience.

(2) Performance analyses of similar equipment currently in service

(3) Aircraft or equipment manufacturers' reliability engineering analyses

(4) History of experience where reliability standards were acceptable to the airline industry

B. If the program does not incorporate statistical performance standards or significantly deviates from the instructions in Advisory Circular 120-17, as amended, the program,
4.8 EVALUATING PROGRAM DISPLAYS AND STATUS OF CORRECTIVE ACTION PROGRAMS AND REPORTING

A. Corrective Action System: Corrective action should be positive enough to restore performance effectively to an acceptable level within a reasonable time. The corrective action system must include provisions for the following:

(1) Notifying the organization responsible for taking the action
(2) Obtaining periodic feedback until performance reaches an acceptable level
(3) Encompassing methods that have been established for the overall maintenance program, such as work orders, special inspection procedures, engineering orders, and technical standards
(4) Critical failures in which loss of function or the secondary effects of failure could affect the airworthiness of the aircraft

B. Statistical Performance Standards System

(1) A performance measurement expressed numerically in terms of system or component failure, pilot report, delay, etc. (bracketed by hours of aircraft operation, number of landing, operating cycles, or other exposure measurement) serves as the basis for the standard. Control limits or alert values are usually based on accepted statistical methods, such as standard deviations or the Poisson distribution.

(2) Some applications use an average or baseline method. The standard should be adjustable and should reflect the operator's experience during seasonal and environmental condition changes and variations

(3) The program should include procedures for periodic review and adjusting the program as appropriate.

(4) The program should include procedures for monitoring new aircraft until sufficient operating experience is available to compute performance standards, normally one year.

C. Data Display and Reporting System

(1) Operators with programs incorporating statistical performance standards (alert programs) should develop a monthly report, with appropriate data displays summarizing the previous month's activity. This report should include the following:

(a) All aircraft systems controlled by the program in sufficient depth to enable the CAA NEPAL and other recipients to evaluate the effectiveness of the total maintenance program

(b) Systems that exceeded the established performance standards and discussion of what action has been taken or planned
(c) An explanation of changes that have been made or are planned in the aircraft maintenance program, including changes in maintenance and inspection intervals and changes from one maintenance process to another

(d) A discussion of continuing over alert conditions carried forward from previous reports

(e) The progress of corrective action programs

2 Programs using other analytical standards (non alert programs) should consolidate or summarize significant reports used in controlling their program to provide for evaluating program effectiveness. These reports may be computer printouts, summaries, or other forms. A typical program of this type reports the following information:

* Mechanical Interruption Summary (MIS) reports
* Mechanical Reliability Reports (MRR)
* Maintenance process and interval assignments (master specification)
* Weekly update to the maintenance process and interval assignments
* Daily repetitive item listing by aircraft
* Monthly component premature removal report, including removal rate
* Monthly engine shutdown and removal report
* Quarterly engine reliability analysis report
* Engine threshold adjustment report
* Worksheets for maintenance process/task and interval changes (not provided to the CAA NEPAL but the CAA NEPAL approves the process/task changes)

D. Program Review System. The program should include a procedure for revision which is compatible with CAA NEPAL approvals. The procedures should identify organizational elements involved in the revision process and the authority. The program areas requiring formal CAA NEPAL approval include any changes to the program that involve the following:

- Procedures relating to reliability measurement/ performance standards
- Data collection
- Data analysis methods and application to the total maintenance program
- Process/task changes
- Adding or deleting components/systems
- Adding or deleting aircraft types
- Procedural and organizational changes concerning administration of the program

4.9 INTERVAL ADJUSTMENTS AND PROCESS CHANGES

A. Maintenance Interval Adjustment and Process Category and/or Task Change System.
Reliability programs provide an operator with a method of adjusting maintenance, inspection, and overhaul intervals without prior CAA NEPAL approval. This does not relieve the operator or the CAA NEPAL of their responsibilities regarding the effects of the program on safety.

B. Procedures: Procedures for adjusting maintenance intervals must be included in the program. Maintenance interval adjustments should not interfere with the ongoing corrective action. There should be special procedures for escalating systems or components whose current performance exceeds control limits.

(1) Typical considerations for adjusting hard time or on condition intervals include the following:
   * Sampling
   * Actuarial studies
   * Unit performance
   * Inspector or maintenance findings
   * Pilot reports

(2) Methods for adjusting aircraft/engine check intervals should be included if the program controls these intervals. Sampling criteria should be specified.

C. Classifying the Maintenance Processes and/or Tasks. The program should include procedures for the classification and assignment of maintenance processes and/or tasks and for changing from one process and/or task to another. Refer to MSG-2 for maintenance processes and MSG-3 for maintenance tasks. It should include the authority and procedures for changing maintenance specifications and the related documents to reflect the interval adjustment or processes and/or task changes.

4.10 PROCEDURES

A. Meet With Operator/Applicant. When related program information is requested, provide Advisory Circular 120-17, Maintenance Control by Reliability Methods, as amended. Advise the operator/applicant of the following program requirements:
   * Program application
   * Organizational structure
   * Data Collection system
   * Methods of data analysis and application to maintenance control
   * Procedures for establishing and revising performance standards
   * Definition of significant terms
   * Program displays and status of corrective action programs
   * Procedures for program revision
   * Procedures for maintenance control changes

B. Evaluate the Program Application Procedures. When the applicant submits a formal
program, ensure that the program document defines the following:

(1) Components, systems, or complete aircraft controlled by the program. Individual systems and/or components are identified by Air Transportation Association Specification 100. A list of all components controlled by the program must be included as an appendix to the program document or included by reference (e.g. time limits, manuals, or computer report).

(2) The portion of the maintenance program controlled by the reliability program (overhaul and/or inspection, check periods, etc.).

C. Evaluate Organizational Structure: The structure must be described adequately and address committee membership, if appropriate, and meeting frequency.

(1) Ensure that the reliability program includes an organizational chart that shows the following:

(a) The relationships among organizational elements responsible for administering the program

(b) The two organizational elements responsible for approving changes to maintenance controls and specifying the duties and responsibilities for initiating maintenance program revisions

NOTE: One of the two organizations must have inspection or quality control responsibility or have overall program responsibility.

D. Evaluate the Organizational Responsibilities

(1) Determine if the reliability program document addresses the following:

(a) The method of exchanging information among organizational elements. This may be displayed in a diagram.

(b) Activities and responsibilities of each organizational element and/or reliability control committee for enforcing policy and ensuring corrective action

(2) Ensure that authority is delegated to each organizational element to enforce policy.

E. Evaluate the Data Collection System

(1) Ensure that the reliability document fully describes the data collection system for the aircraft, component, and/or systems to be controlled. The following must be addressed:

* Flow of information
* Identification of sources of information
* Steps of data development from source to analysis
* Organizational responsibilities for each step of data development

(2) Ensure that the document includes samples of data to be collected, such as powerplant disassembly and inspection reports, component condition reports, mechanical delay and cancellation reports, flight record reports, premature removal reports, inflight shutdowns, confirmed failure reports, internal leakage reports, and
engine shutdown reports.

(3) Ensure that the reliability document includes a graphic portrayal of program operations. It must be a closed loop and show source data, data correction, and analysis.

F. Evaluate the Methods of Data Analysis and Application to Maintenance Controls. Ensure that the data analysis system includes the following:

(1) One or more of the types of action appropriate to the trend or level of reliability experienced, including:
   * Actuarial or engineering studies employed to determine a need for maintenance program changes
   * Maintenance program changes involving inspection frequency and content, functional checks, overhaul procedures, and time limits
   * Aircraft, aircraft system, or component modification or repair
   * Changes in operating procedures and techniques

(2) The effects on maintenance controls such as overhaul time, inspection and check periods, and overhaul and/or inspection procedures

(3) Procedures for evaluating critical failures as they occur

(4) Documentation used to support and initiate changes to the maintenance program, including modifications, special inspections, or fleet campaigns. The program must reference the operator's manual procedures for handling these documents.

(5) A corrective action program that shows the results of corrective actions in a reasonable period of time. Depending on the effect on safety, a "reasonable" period of time can vary from immediate to an overhaul cycle period. Each corrective action plan or program must be made a matter of record and include a planned completion date. Samples of forms used to implement these actions must be included in the program document.

(6) A description of statistical techniques used to determine operating reliability levels

G. Evaluate the Procedures for Establishing and Revising Performance Standards

(1) Ensure that each program includes one of the following for each aircraft system and/or component controlled by the program:
   * Initial performance standards defining the area of acceptable reliability
   * Methods, data, and a schedule to establish the performance standard

(2) Ensure that the performance standard is responsive and sensitive to the level of reliability experienced and is stable without being fixed. The standard should not be so high that abnormal variations would not cause an alert or so low that it is constantly exceeded in spite of the best known corrective action measures.

(3) Ensure that the procedures specify the organizational elements responsible for
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monitoring and revising the performance standard, as well as when and how to revise the standard.

H. Evaluate Definitions: Verify that each program clearly defines all significant terms used in the program. Definitions must reflect their intended use in the program and will therefore vary from program to program. Acronyms and abbreviations unique to the program must also be defined.

I. Evaluate Program Displays and Status of Corrective Action Programs and Reporting

1. Ensure that the program describes reports, charts, and graphs used to document operating experience. Responsibilities for these reports must be established and the reporting elements must be clearly identified and described.

2. Ensure that the program displays containing the essential information for each aircraft,

3. System and component controlled by the program are addressed. Each system and component must be identified by the appropriate ATA Specification 100 system code number.

4. Ensure that the program includes displays showing:
   * Performance trends
   * The current month’s performance
   * A minimum of 12 months experience
   * Reliability performance standards (alert values)

5. The program must include the status of corrective action programs. This includes all corrective action programs implemented since the last reporting period.

J. Evaluate the Interval Adjustments and Process and/or Task Changes System.

1. Review the change system procedures: Ensure that there are special procedures for escalating systems or components whose current performance exceeds control limits.

2. Ensure that the program does not allow for the maintenance interval adjustment of any Certification Maintenance Requirements (CMR) items. CMR’s are part of the certification basis. No CMR item may be escalated through the operator maintenance/reliability program. CMR’s are the responsibility of CAA NEPAL engineering as far as approval and escalation.

NOTE: The operator may not use its reliability program as a basis for adjusting the repeat interval for its corrosion prevention and control program; however the operator may use the reliability program for recording data for later submission to the CAA NEPAL to help substantiate repeat interval changes.

3. Ensure that the program includes provisions for notifying the Authority when changes are made.

K. Evaluate the Procedures for Program Revisions. The reliability document must accomplish the following:
(1) Identify and isolate areas which require CAA NEPAL approval for program revision, including the following:
* Reliability measurement
* Changes involving performance standards, including instructions relating to the development of these standards
* Data collection system
* Data analysis methods and application to maintenance program
* Any procedural or organizational change concerning program administration

(2) If the operator proposes that all revisions to the program document be approved by the (AUTHORITY), isolation of those areas requiring CAA NEPAL approval is not required. However, the document must recognize each of the above requirements and must contain procedures for adequately administering and implementing changes required by these actions.

(3) Identify the organizational element responsible for approving amendments to the program

(4) Provide a periodic review to determine that the established performance standard is still realistic

(5) Provide procedures for distributing approved revisions

(6) Reference the operator's manual and provide the overhaul and inspection periods, work content, and other maintenance program activities controlled by the program

L. Evaluate the Procedures for Maintenance Control Changes. Ensure that the reliability program document addresses the following:

(1) Procedures for maintenance control changes to the reliability program

(2) The organizational elements responsible for preparing substantiation reports to justify maintenance control changes. At least two separate organizational elements are required, one of which exercises inspection or quality control responsibility for the operator

(3) Processes used to specify maintenance control changes (e.g. sampling, functional checks, bench checks, decision tree analysis, and unscheduled removal)

(4) Procedures covering all maintenance program activities controlled by the program

(5) Procedures for amending operations specifications, as required

(6) Procedures to ensure maintenance interval adjustments are not interfering with ongoing corrective actions

(7) Critical failures and procedures for taking corrective action

(8) Procedures for notifying the CAAN, when increased time limit adjustments or other program adjustments occur are addressed

M. Analyze Reliability Program Evaluation: Upon completion, record all deficiencies noted. Determine the appropriate corrective action(s) to be taken. Deficiencies noted in the program must be given to the operator/applicant in writing.
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5.1 OBJECTIVE

This chapter provides guidance for evaluating a maintenance program developed by an operator/applicant subject to NCAR Chapter C.4.

5.2. GENERAL

A maintenance program combines the maintenance and inspection functions used to fulfill an operator/applicant's total maintenance needs. The state's regulations normally require that an operator must have a maintenance program adequate to perform the work and qualified competent persons to certify the maintenance and to monitor performance.

A. Definitions

(1) Airworthiness: A condition in which the aircraft, airframe, engine, propeller, accessories, and components meet their type design and are in a condition for safe operation.

(2) Inspection: The routine performance of inspection tasks at prescribed intervals. The inspection must ensure the airworthiness of an aircraft, up to and including its overhaul or life-limits.

(3) Scheduled (routine) maintenance: The performance of maintenance tasks at prescribed intervals.

(4) Unscheduled (Non-routine) maintenance: The performance of maintenance tasks when mechanical irregularities occur. These irregularities are categorized as to whether or not they occur during flight time.

(5) Structural Inspection: A detailed inspection of the airframe structure that may require special inspection techniques to determine the continuous integrity of the airframe and its related parts.

B. Program Requirements. Basic requirements of a maintenance program which will, include the following:

* Inspection
* Scheduled Maintenance
* Unscheduled Maintenance
* Overhaul and Repair
* Structural Inspection
* Duplicate Inspections
* Reliability Program (if appropriate)

C. Manuals: Instructions and standards for unscheduled maintenance should be in the operator/applicant's technical manuals. The manuals must contain procedures to be
followed when using these manuals and recording scheduled and unscheduled maintenance.

D. Approval: Maintenance programs are approved by issue of ‘operations specifications’ or by direct approval of the maintenance program document. The approved document should describe the scope of the program and reference manuals and other technical data. Details of the program must also be included in the operator/applicant's manual.

E. Operator/Applicant's Organization: The operator/applicant must have an organization adequate to carry out the provisions of the maintenance program. If the work is to be performed outside of the operator/applicant's organization, the contractor must meet the same requirements. In determining the adequacy of the organization, the following must be considered:

* The complexity of the organization
* The aircraft
* The experience of the personnel
* The number of personnel

5.3 INSPECTIONS

A. Applicability: During the original certification process of an operator/applicant, the Airworthiness Inspector (AWI) should ensure that the maintenance program is applicable to the operation in question. In order to do so, the Airworthiness Inspector (AWI) will inform the operator/applicant of the pertinent policies, procedures, and requirements of the regulations.

B. Scheduling: The operator/applicant and the Airworthiness Inspector (AWI) should develop a plan to determine a schedule for the submission of required documents.

(1) Scheduled maintenance: Maintenance tasks performed at prescribed intervals are considered scheduled maintenance. Some of these tasks are performed concurrently with inspection tasks and may be included on the same work form. Work forms that include maintenance instructions must be provided for a record of the accomplishment of these tasks.

(a) Scheduled tasks include replacement of life-limited items and components requiring periodic overhaul, special non-destructive inspections (such as X-rays), checks or tests for on-condition items, lubrications, and weighing aircraft.

(b) Prime factors considered for inspection intervals are aircraft utilization, environmental conditions, and the type of operation. Examples include changes in temperature, frequency of landings and takeoffs, operation in areas of high industrial pollutants, and passenger or cargo operations.

(c) To ensure proper maintenance, each inspection interval must be stated in terms of calendar times, cycles, and hours, as required.

(2) Unscheduled maintenance: Unscheduled maintenance takes place when mechanical irregularities occur.
(a) Mechanical irregularities occurring during flight time: These include operational failures and malfunctions and abnormal flight operations, such as hard or overweight landings. The aircraft maintenance record must be used to record each irregularity and its corrective action.

(b) Mechanical irregularities not occurring during flight time: These include all other failures, malfunctions and discrepancies, including, but not limited to, inspection findings. A discrepancy form or equivalent system must be used to record each irregularity and its corrective action.

B. Types of Maintenance

(1) Overhaul and repair (airframe, engine, propeller, and component): Maintenance for these items, whether scheduled or unscheduled, may be independent from maintenance performed on the aircraft. The operator/applicant must provide instructions and standards for repair and overhaul, along with a method of approving and recording the work. Appropriate life-limited parts replacement requirements should be included in this portion of a maintenance program.

(2) Structural inspection

(a) Each level of inspection must be clearly defined in the operator/applicant's maintenance program. For example, a specific area of the aircraft may require only a visual inspection during preflight A and B checks but will require a detailed, X-ray or Zyglo inspection in the same area for a "C" or "D" check.

(b) Some aircraft are subject to a supplemental structural inspection document, which requires additional age-related structural inspections to be incorporated into the maintenance program.

D. Requirements: If a certificated operator proposes changes to the maintenance program, the Airworthiness Inspector (AWI) must determine the impact of the revision on the program. Since maintenance programs vary, depending on the operator/applicant's complexity of operation, the Airworthiness Inspector (AWI) must become familiar with all of the pertinent technical and regulatory aspects of the program.

E. Return to Service: Through the provisions (insert appropriate national regulation), operators utilizing a maintenance program may be considered maintenance organizations. As such, they are authorized to approve aircraft and/or equipment for return to service and are responsible for meeting all the applicable requirements.

(1) The persons exercising certificate privileges have always had the responsibility to show compliance with regulatory requirements and to make a determination of conformance and safety. The need to ensure that a replacement part was produced by a CAA approved source is therefore critical.

(2) Inspectors, during the process of certification and surveillance, must ensure that the operator/applicant fully understands the regulatory requirements and the resulting responsibility to show that any/all parts and/or materials used, from any source, are airworthy (i.e., conform to type design), are equal
to the original or properly modified condition, and have been maintained properly.

(3) Additionally, the inspector must ensure that the operator/applicant’s manual contains adequate procedures at the incoming inspection to determine the part is genuine and serviceable, prior to the material being stocked or used.

F. Small aircraft operators: An operation with an approved maintenance program must maintain its aircraft according to that program.

G. Maintenance performed for other operators: A large aircraft operator with an approved maintenance program may also perform maintenance for another certificate holder. Such maintenance must be performed in accordance with that certificate holder’s approved program. However, a small aircraft operator is not authorized to perform maintenance for a large aircraft operator, and vice versa.

5.4. MAINTENANCE PROGRAM

A. The maintenance program must incorporate a set of procedures that ensures the following:
   * Maintenance and modifications are performed according to the operator's manual
   * Competent personnel, and adequate facilities and equipment are provided for the proper performance of maintenance and modifications
   * Each aircraft released to service is airworthy
   * Airworthiness Inspections and Duplicate Inspections are performed as per the operator's manual by qualified personnel

B. Airworthiness Inspections: National regulations stipulate that each operator's manual must discuss airworthiness inspections, including instructions covering procedures, standards, responsibilities, and authority of inspection personnel. The methods and procedures established by the operator's manual must be followed as prescribed in the national regulations.

C. Duplicate Inspections are maintenance that must be carried out.

(1) The manual must contain a designation of the items of maintenance that require duplicate inspections. These will include, at a minimum, those items that could result in failure, malfunction, or defect endangering the safe operation of the aircraft if maintenance is not performed properly or if improper parts or materials are used.

(2) In determining the work items which require a duplicate inspection, the operator should consider the importance of the following:
   * Installation, rigging, and adjustments of flight control
   * Installation and repair of major structural components
   * Installation of aircraft engines, propellers and rotors
   * Overhaul, calibration or rigging of components such as engines, propellers, transmissions, gear boxes, or navigation equipment
5.5 INSPECTION ORGANIZATION

It is recommended that inspections should be carried out by the following persons:

A. BASE MAINTENANCE

(1) The person who carried out the particular base maintenance task should sign that they have accomplished the task only when satisfied by self inspection that the task has been properly carried out in accordance with the approved maintenance instructions.

(2) If the aircraft maintenance programme requires a specific inspection in addition to the one performed above, this inspection should be accomplished by another competent person, who should sign for the second inspection when satisfied.

(3) The base maintenance certifying staff should issue release to service for the aircraft when satisfied that the complete maintenance process has been carried out in accordance with the approved procedures.

(4) For organizations with less than 50 (± 20 %) maintenance personnel, Base Certifying Staff may carry out both Para. (2) and (3) roles subject to the personnel Terms of Reference and the Exposition making reference to such fact.

(5) For organizations with less than 5 maintenance personnel, as an alternative to Para (4), Base Certifying Staff may carry out both Para (1) and (3) roles subject to a contractual arrangement with another AMO to satisfy the requirements of Para (2) when an additional inspection is required. Such an arrangement would be subject to the advance agreement of the CAA NEPAL if it was considered workable and details being included in the Exposition.

B. LINE

(1) The person who carried out the scheduled line maintenance tasks and specified unscheduled defect rectification not involving test should carry out the inspection function. Such person should issue a release to service for the tasks completed only when satisfied by self inspection that the tasks have been properly carried out in accordance with the approved maintenance instructions.

(2) The person who carried out all other unscheduled maintenance tasks not covered by Para (1) including the use of test equipment, should issue a release to service for the tasks completed when satisfied by self inspection that the tasks have been properly carried out in accordance with the approved maintenance instructions.

(3) A Para (2) person may also carry out Para (1) tasks and issue a release to service for such tasks subject to meeting the CAA Nepal competence requirements.

C. WORKSHOPS

(1) The person who carried out the maintenance task specified in the approved maintenance instructions should sign that they have accomplished the task only when satisfied by self inspection that the task has been properly carried out in accordance with the approved maintenance instructions.

(2) The workshop component certifying staff should issue release to service for the
aircraft component when satisfied that the complete maintenance process has been carried out in accordance with the approved procedures including additional inspections, when required.

(3) For organizations with less than 5 mechanics personnel a Para (2) person may also carry out the role of the Para (1) person subject to meeting the CAA NEPAL’s competence requirements.

D. Personnel Considerations: The operator/applicant must maintain a current listing of certifying staff. Each individual must be identified by name, occupational title, and list the authorizations granted.

(1) To comply with these requirements, the operator’s personnel staff list may be used. This staff list should include a method for positive identification of those who are trained, qualified, authorized, certificated, and current.

(2) Authorized individuals may be informed by letter or by a list showing the extent of their responsibilities, authorities, and inspection limitations. If a list is used, it should be signed by each authorized individual to confirm that the authorized person is fully aware of any inspection limitations.

5.6 APPROVAL PROCESS

A. Check that the application for approval of Maintenance Program is signed by authorized personnel from operator (QA Chief, Engineering Director or Equivalent post holder).

B. Verify checklist for approval/Revision of Maintenance Program for its completeness and signature by authorized personnel from Operator.

C. Review the Schedule of Events. If this task is performed as a part of the approval of an organisation, review the Schedule of Events to ensure that this task can be accomplished within the schedule.

D. Evaluate the Organization Documentation. The maintenance program must contain the following as per NCAR C.4 and NCAR Part M.A.302

(1) A complete description of the operator’s organization as it relates to the program, including the duties and responsibilities of the relevant individuals

(2) A list of persons with whom the operator/applicant has arranged for the performance of any work along with a general description of that work

(3) A proper separation of maintenance and inspection functions for the performance of auditing

(4) Maintenance tasks and the intervals at which these are to be performed, taking into account the anticipated utilization of the aeroplane.

(5) When applicable, a continuing structural integrity programme;

(6) Procedure for changing or deviating from (4) and (5) above; and

(7) When applicable, condition monitoring and reliability program descriptions for aircraft systems, components and powerplants.
E. Evaluate the Inspection and Maintenance Programs. The maintenance program must contain inspection and maintenance procedures for the performance of maintenance and modifications. These procedures must, at a minimum, include the following:

(1) The method of performing routine and non-routine maintenance and modifications
(2) The method for performing duplicate inspections
(3) The method of approving inspection personnel performing required inspections by occupational title, name, and authorization
(4) Procedures for the re-inspection of work performed as a result of previous required inspection findings (buy back procedures)
(5) Procedures for the periodic inspection and calibration of precision tools, measuring devices, and test equipment
(6) Procedures for maintaining records and control of the inspections and calibrations
(7) Instructions and procedures to prevent any decision of an inspector regarding any inspection from being countermanded
(8) Procedures to ensure that inspections, maintenance, and modifications that are left incomplete as a result of a work interruption are properly completed before the aircraft is released to service
(9) Work forms, job cards, and detailed procedures for performing inspections and other maintenance

F. Evaluate the Maintenance Records/System: The maintenance program must contain a maintenance record keeping system. The operator/applicant must meet the requirements. In addition, the operator must have a system for the retention and retrieval of maintenance records to provide the following:

* A description of the work performed
* The name of the person performing the work and/or the name of the organization if other than the operator/applicant's
* The name of the person approving the work

G. Evaluate Personnel: The maintenance program must contain the following:

(1) Procedures to determine the qualifications of personnel, including management and supervisory personnel
(2) Procedures to ensure that only persons appropriately certificated, properly trained, authorized, qualified, and current certify maintenance
(3) **Instructions to relieve any person performing maintenance for excessive periods of time without adequate rest periods**

Evaluate the Structural Inspection Procedures: This part of the maintenance program must include the following:

* Corrosion control procedures
* A detailed inspection of areas where maintenance is being performed to detect cracks, distortion, and corrosion, to examine attachment of parts, and to determine the condition of the area
* Maintenance Review Board/manufacturer's routine structural inspection requirements

**H. Analyze the Findings**

(1) Evaluate all deficiencies to determine what, if any, corrective actions will be required.

(2) If there are deficiencies in the maintenance program, schedule a meeting with the operator/applicant to discuss needed program changes and deficiency resolutions.

**I. After all the requirements are met and findings are addressed by operator, initiate a memo to superior officer.**

**J. Once approved by the Director General, issue a letter stating that the Maintenance Program submitted by Operator has been approved.**
Chapter 6
Continuing Analysis & Auditing Program

6.1 OBJECTIVE

This chapter provides guidance for reviewing an operator/applicant's Continuous Analysis and Auditing Program so that it meets the necessary regulatory requirements. This process should not be confused with the requirement for an operator to have an internal audit program – this requirement is additional as it requires that an operator checks to verify that his maintenance program/schedule is effective in maintaining his fleet.

Reference can also be made to other Chapters of this manual including:
Chapter 5 ‘Reliability Program’,
Chapter 17 ‘General Auditing’ and
Chapter 19 ‘Company Maintenance manual’

6.2 GENERAL

A. A continuing analysis and audit system should be included in the operator’s maintenance manual. The system shall ensure the adequacy of an operator's maintenance program and confirm that the program is properly followed and controlled. The authority may require revisions to an operator's maintenance program based on deficiencies or irregularities revealed by the continuing analysis and audit system.

B. Continuing Analysis and Audit Program Functions

1) A continuing analysis and audit system has two functions:

(a) The "audit function" which includes a follow up for those components removed, and the strip report must be a part of the Continuing Analysis and Audit Program. It must also include examining the administrative and supervisory aspects of the operator's program (including work done outside of the operator's basic organization). The audit must ensure that the Main Base and Line Stations, and shops operate in accordance with company procedure. Details of the audit function are contained in Chapter 17 of this manual and include such things as:

* Ensuring that all publications and work forms are current and readily available to the user
* Ensuring that major repairs/alterations are classified properly and accomplished with approved data
* Ensuring that carryover items and deferred maintenance are properly handled
* Ensuring that vendors are properly authorized, qualified, staffed, and equipped to do the contractor function according to the operator's manual

(b) The "performance analysis function" includes daily and long term monitoring and emergency response related to the performance of affected aircraft systems, including aircraft engines and components. This function includes monitoring such...
things as:

* Daily mechanical problems for affected aircraft (daily monitoring)
* Deferred maintenance items including excessive number and times (daily monitoring)
* Pilot reports compiled by Air Transport Association (ATA) code (long term monitoring)
* Mechanical Interruption Summary Reports (MIS) (long term monitoring)
* Contained engine failures (emergency response)
* High number of unscheduled component removals (long-term monitoring)

(2) The continuing analysis and audit program should include a system of data collection and analysis which may or may not be part of a reliability program (refer to Chapter 5 of this manual).

C. The continuing analysis and audit system also addresses operational matters, such as maintenance scheduling, control and accountability of work forms, conformance to technical instruction, and compliance with procedural requirements. Additionally, it examines the adequacy of equipment and facilities, parts protection and inventory, mechanic competency, and shop orderliness.

6.3 REVIEWING THE OPERATOR'S PROGRAM

A. For maximum effectiveness, the continuing analysis and audit program should be separated from other maintenance functions. Some operators establish a separate quality assurance organization for this purpose. Others assign this function to their inspection/quality control organization. When the analysis and audit responsibility is assigned to an organizational unit that has other duties, these functions should be performed independently of the other duties.

B. Mechanical performance analysis may be performed as part of a reliability program or as an independent data collection and analysis system (See Chapter 5 of this manual “Reliability Program” & FAA Advisory Circular 120-17, Maintenance Control by Reliability Methods). The system should include charting or other appropriate methods for recording and accounting of pertinent data at specified intervals. This will ensure continuous program operation. Data collection and analysis are essential elements for supporting the condition monitoring process.

C. The use of contract agencies tends to complicate an operator's continuous analysis and audit system. When a contractor fails to provide the operator with essential information (such as failure characteristics, service times, etc.), gaps are created in the operator's data collection. This obstructs the continuous analysis and audit system. Therefore, the continuing analysis and audit program must include procedures for transmitting essential information back to the operator.

D. When aircraft fleets are grouped for purposes involving data collection, the data from the total of the fleets may provide a valid comparison for behavior of one of the fleets. However, data generated by a single airplane or a small fleet can be obscured by a larger fleet of the group.
NOTE: Unacceptable performance of a small fleet may not contribute a significant statistical impact unless the
data from the smaller fleet is reviewed individually.

E. When an operator uses a contractor for total maintenance support, the operator is responsible for the continuing analysis and audit requirement. The operator must have enough personnel and resources to accomplish both the audit and performance analysis functions.

F. The complexity and sophistication of the continuous analysis and audit system should relate to the certificate holder's operation. A small operator should not be expected to have a complex system similar to a large airline. However, small operators must have a system with continuous data collection which includes specified analysis points and repetitive examinations.

G. A data collection and analysis program can use a manufacturer as a collection and analysis center if the Director agrees. The operator is still responsible for the development and implementation of corrective actions and the overall effectiveness of the program.

H. The human factor principles will be taken into account while evaluating the maintenance program.

6.4. APPROVAL PROCESS

A. Brief Operator/Applicant on program requirements and procedures. Inform the operator/applicant that an acceptable program must have a continuous internal audit and analysis system that accomplishes the following:

* Evaluates the organization's performance and compliance with regulatory requirements,
* Identifies the deficiencies
* Determines and implements corrective actions
* Determines the effectiveness of corrective actions

B. Review the Operator/Applicant's Program. When the operator/applicant presents the complete continuing analysis and audit program, ensure that the program audits and analyzes the following:

* Aircraft inspections
* Scheduled maintenance
* Unscheduled maintenance
* Aircraft, engine, prop and appliance repair and overhaul
* Maintenance manuals
* Mechanical Reliability Reports (MRRs)
* Mechanical Interruption Summary Reports (MISRs)
* Vendor facilities and capabilities
* Maintenance organization staffing
C. Review Operator's Manual. Ensure that the manual contains the following:

1. An organizational chart that defines the lines of authority and separates QA from other functional areas.
2. Definitions of responsibilities and duties
3. The means by which the information will flow within the operator/applicant's organization and between any contractor/vendors and the operator/applicant
4. Examples of forms or reports that are used
5. Procedures that include a record review covering the following items:
   * Accountability for all inspection requirements
   * Routine and nonroutine maintenance records
   * Overhaul records
   * Methods of Airworthiness Directives (ADs) compliance
   * Service bulletin compliance
   * Major repairs and alterations approval data

D. Evaluate Available Staffing. Ensure that the staffing described in the manual is available and appropriate for the complexity of the operator/applicant's operation.

E. Analyze Results. Upon completion of the review, analyze the results and determine whether the operator/applicant's program meets all requirements. If problems exist, discuss the discrepancies with the operator/applicant and advise them as to what areas need corrective action.
Chapter 7
Facilities & Equipment

7.1. OBJECTIVE

This chapter provides guidance for evaluating a maintenance organization facility for original certification, change in rating, or change in location or facilities. This chapter can be applied to an AOC holder or a dedicated maintenance facility.

7.2. GENERAL

A. When determining the suitability of permanent housing for the maintenance of airframes, the inspector should consider climatic conditions. This is to determine if worker efficiency will be adversely affected by high or low temperatures, excessive dust or sand, or other conditions. The inspector should also consider the maintenance being performed to determine if work processes are affected adversely by conditions.

B. Because of the requirement for testing of systems on aircraft operating under IFR and other specialized services such as X-ray, magnaflux, etc., there may be a need for an AMO to have the capability to move from location to location.

(1) Certificate holder/applicants may move any or all of their material, equipment, and technical personnel from place to place for the purpose of performing their functions. The address shown on the maintenance organization application will be considered the station’s permanent location.

(2) If the station wishes to establish an additional location different than that shown on the application, the applicant should apply for satellite certification. If facilities exist that the certificate holder/applicant does not want certificated as a satellite station, they must be inspected and accepted by the Director prior to being used.

C. Applicants for Accessory or Instrument ratings must possess the equipment and have the capability to inspect, test, and where necessary calibrate the items that will be worked on.

7.3 SATELLITE MAINTENANCE ORGANIZATION INSPECTIONS

A. An approved maintenance organization may apply for certification of additional facilities or locations as satellites of a parent organization. This enables the parent facility to control inspection procedures at each facility and location. Each satellite must satisfy all regulatory requirements for each rating sought. A satellite facility inspection is conducted in the same manner as a maintenance organization facility inspection.

B. A letter must accompany the application. This letter must:

* Request the application to be processed
* Indicate when the facilities and equipment will be ready for inspection
* Show the certificate number of the parent station
C. An application for the satellite station need not be limited to the ratings held by the parent organization. The ratings sought by the satellite must be on the application.

D. A maintenance organization wishing to operate a satellite maintenance facility in a foreign country must apply for a foreign maintenance organization certificate, not a satellite certificate.

7.4 FOREIGN MAINTENANCE ORGANIZATIONS INSPECTIONS

A. The supervisory or inspection personnel of a foreign maintenance organization must be able to understand the (insert national regulations) and the maintenance and service instructions of the articles to be worked on. These personnel may not be required to hold national AME licences or approvals.

(1) If no certificate is held, determination of performance qualifications is made by using oral tests, practical tests, or any method acceptable to the Director.

(2) Supervisory personnel or personnel responsible for the final inspection of work on an aircraft of (insert home country name) at a foreign maintenance organization must be able to read, write, and understand (English).

B. Although foreign maintenance organizations are not required to comply with all national regulations, foreign maintenance organizations are required to make reports and keep records in compliance with the regulations.

7.5 CONTRACT MAINTENANCE FACILITIES

A. It may be required for an applicant for a maintenance organization certificate to provide a list of maintenance functions to be performed by other persons. To ensure the original certification criteria will continue to be met, the certificate holder must submit a revised listing when changes occur. It is the inspector’s responsibility to ensure that the regulations allow the work to be contracted out. This listing must be retained in the airworthiness office files.

B. If work is contracted out to a non certificated person; the certificate holder/applicant is responsible for ensuring that all work is performed in accordance with regulatory requirements.

C. If a certificated maintenance organization intends to perform job functions that were previously contracted out, senior inspectors should plan to observe these functions during surveillance. If this requires the addition of facilities or equipment to perform these functions, they must be inspected prior to use.

7.6 APPROVAL PROCESS

A. Receive/Review Application Documents/Inspection Procedures Manual. Review the application for accuracy and a determination of ratings or location applied for. Also determine if any maintenance functions will be contracted out.

B. Evaluate housing and facilities. Inspect the following:

(1) Housing and shop areas to ensure the following:

(a) Adequate housing includes sufficient work space for maintenance functions to be accomplished
(b) If requesting an airframe rating, that housing includes:
   * Suitable permanent housing for at least one of the heaviest aircraft within the weight class of the rating being sought
   * If climatic conditions allow, a permanent work dock that meets the requirements of the regulations

(c) Proper storage and protection of:
   * Materials
   * Parts
   * Supplies

(d) Proper identification and protection of parts and subassemblies during:
   * Disassembly
   * Cleaning
   * Inspection
   * Repair
   * Alteration
   * Assembly

(e) Segregation of the following:
   * Incompatible work areas, e.g., metal shop, battery charging area, or painting area next to an assembly area
   * Non partitioned parts cleaning areas

(f) Proper ventilation, lighting, and temperature and humidity for the type and complexity of work being accomplished

(2) Technical documents to ensure that documents:
   * Are in compliance with the regulations
   * Are appropriate for the maintenance to be performed
   * Are current, accurate, and complete and in maintenance organization's possession
   * Are easily accessible to personnel and are controlled (no unauthorized copies)
   * Include a method to ensure revisions are made

(3) Equipment, tools, and test equipment, per rating sought, to ensure:

(a) Required types and quantities are available and under the control of the maintenance Organization.

(b) All required items are serviceable and within calibration criteria, to include traceability to one of the following:
   * National Standards
* Standard established by the item's manufacturer

* If foreign manufactured, the standards of the country where manufactured, if approved by the Director

(c) A system exists which makes it readily apparent to the user that the item is not overdue for calibration.

(d) A record keeping system exists of calibration results

**NOTE:** If the maintenance organization utilizes an engine test cell, it must be correlated to the manufacturer's specifications.

C. Review qualified staff list. Ensure that:

(1) Personnel directly in charge of maintenance functions for the maintenance organization are licenced/approved in accordance with the regulations

(2) The certificate holder/applicant has a list of supervisory and inspection personnel that list at least one appropriately licenced/approved mechanic in a supervisory position.

(3) The certificate holder/applicant’s staff list includes inspectors authorized to make final airworthiness determinations

D. Analyze findings. If deficiencies is found, meet with certificate holder/applicant to discuss possible corrective actions.
8.1. BACKGROUND AND OBJECTIVES
This chapter provides guidance for approving contracted reliability programs for airline operators who contract out their maintenance.

8.2 GENERAL
A. Definitions
   (1) Contractor: An operator contracting out an approved maintenance program controlled by a reliability program to another operator.

B. Responsibility. This task is performed by the Airworthiness Inspectors (AWIs) assigned to the operator/applicant. Special attention must be given to evaluate each element of a proposed program.

8.3 CONTRACTUAL MAINTENANCE AGREEMENTS
A. Contractual maintenance agreements are used by operators for various reasons, including:
   * The impracticality of staffing and equipping maintenance facilities
   * Lack of a technical support staff to develop effective maintenance programs
   * Insufficient reliability control due to lack of statistical data

B. Under contractual maintenance agreements, an operator's aircraft is treated as a part of a contractor's operating fleet. The operator is not required to develop its own reliability program for this arrangement. The operator must, however, have a continuing analysis and surveillance system and must participate in the contractual arrangement as necessary to uphold its airworthiness responsibilities.

C. An operator/applicant must provide the Senior Airworthiness Inspector with information and data needed to show the effectiveness of this agreement.

D. Traditionally, an aircraft maintenance program is based on:
   * Integrity of the system, component, or installation
   * The capability of the facility performing the maintenance
   * The types of operation and environmental conditions in which the equipment is used

E. Equipment similarities and operating characteristics, such as utilization, flight cycle length, and environment must be considered when evaluating a contractual arrangement. Program approval and the need to adjust inspection intervals, overhaul periods, etc., must be based on the suitability of the program.

8.4. OPERATOR AND CONTRACTOR COMPATIBILITY
When evaluating a contractual arrangement for a reliability program, the following must be considered:
A. Equipment: When model, configuration, or previous maintenance programs vary between the operator/applicant's equipment and the contractor's equipment, the program must identify the maintenance tasks required to include the operator/applicant's equipment in the contractor's program. The program must also show additional tasks required to address specific differences in equipment.

B. Utilization: If the operator's projected annual utilization differs significantly from the contractor's, consideration should be given to imposing calendar limits for inspection intervals in place of or in addition to flight hours.

C. Flight Cycle Length: If the operator's ratio of flight hours per cycle differs significantly from the contractor's ratio, the operator's maintenance program may need adjustment to compensate for the differences.

D. Environment: The operator's maintenance program may also need to be adjusted if the operating environments of the operator/applicant and contractor differ significantly. The operator/applicant may need to change existing maintenance tasks, adjust intervals, and/or add new maintenance tasks.

8.5 RELIABILITY PROGRAM DOCUMENT

When an air carrier develops reliability programs for use by other air carriers, the reliability program document must define the responsibilities of the participating air carriers and include procedures for interface between the two. The document must be based on the premise that the operator adopts appropriate portions of the contractor's approved aircraft maintenance program. The reliability program must meet the requirements of the authority.

8.6 DATA ANALYSIS

The contractor's reliability program must describe the data analysis system. The contractor should consolidate all data collected, analyze the data, and return it to the operator/applicant in a usable form. This analysis should compare the mechanical performance of the operator/applicant's aircraft to acceptable levels and to the performance of the contractor's fleet.

8.7 PROGRAM DISPLAYS AND STATUS OF CORRECTIVE ACTION PROGRAMS

Displays and reports must highlight the systems that have exceeded the established performance standard. "Over alert" conditions should be carried over from previous reports and a status of ongoing corrective action should be provided.

A. The contractor's program must describe the reports, charts, and graphs used to document operating experience. Responsibilities for these reports must be established and the reporting elements must be clearly identified and described.

B. Program display containing the essential information for each aircraft, aircraft system, and component controlled by the program must be described. Each system and component must be identified by the appropriate Air Transportation Association Specification 100 system code number.

C. The following must be displayed:
Performance trends
* The current month's performance (graphical or tabular presentations may be used)
* A minimum of 12 months experience
* The reliability performance standards (alert values)

D. The status of corrective action programs must include all corrective action programs implemented since the last reporting period.

E. The contractor must have manual procedures or a contractual requirement to provide the operator with reports that reflect performance experience and status of corrective action.

8.8 CONTRACTUAL AGREEMENT
The requirements imposed on the contractor by the operator's maintenance program, reliability program, and operations specifications must be supported by the contractual agreement. The operations specifications issued to the operator are not binding on the contractor. It is the operator/applicant's responsibility to ensure that all requirements of the specifications, program, and manual are met.

8.9 APPROVAL
The Director General may approve the use of the reliability program by issuing operations specifications or approval of the Company MM. Program changes must be approved by the Senior Airworthiness Inspectors either on an individual basis or by procedures approved as part of the reliability program.

8.10 EVALUATION PROCEDURES
A. Meet with the operator/applicant. Provide the operator/applicant with appropriate information.

(1) Upon request for reliability program information, provide Advisory Circular 120-17, as amended.

(2) Advise the operator/applicant that the application for authorization to use a contractor's reliability program consists of at least the following documents:
* Contractor's approved reliability program
* Operator/applicant's manual procedures to support the reliability program
* Operations specifications checklist/worksheet
* The contractual agreement between the operator/applicant and the contractor

(3) Advise the applicant that the reliability program must include the following:
(a) For the operator/applicant and contractor:
* Adequate organizational structure
* Data collection and analysis
* Program revisions
Details of contractual arrangements

(b) For the contractor only:
   * Adjustment of time limits and process changes
   * Definition of significant terms
   * Procedures for revising performance standards

(c) Provisions for compatibility between the operator/applicant and the contractor regarding types of equipment, operational environment, flight length, and aircraft utilization.

B. If possible contact the contractor's (NAA) office holding the contractor’s file. Accomplish the following:
   (1) Ensure that the contractor has a valid certificate, an approved continuous airworthiness maintenance program, and an approved reliability program (if applicable) for the type equipment operated by the operator/applicant
   (2) Review the content of the contractor's reliability program (if applicable)
   (3) Determine the types of equipment the operator/applicant has in operation

C. Determine if the operator/applicant's and the Contractor's Equipment, Utilization, Flight Cycle Length, and Environment are compatible

D. Evaluate Program Application Procedures. Ensure that the contractor's reliability program includes the following:
   (1) Components, systems, or complete aircraft controlled by the program. Individual systems and/or components are identified by Air Transportation Association Specification 100. A list of all components controlled by the program must be included.
   (2) A complete aircraft inspection program, including the portion of the maintenance program controlled by the reliability program (overhaul and/or inspection, check periods, etc.)
   (3) Evaluation of conditions and trends found during the inspection of the aircraft that will result in corrective action

E. Evaluate the operator/applicant's and the Contractor's Organizational Structures. The organizational charts just show the following:
   (1) The relationship between the participants responsible for administering the program
   (2) The authority delegated to each organizational element

F. Evaluate Organizational Responsibilities
   (1) Ensure that the contractor's reliability program document and the operator/applicant's procedures describe how information is exchanged between organizational elements. This may be displayed in a diagram.
   (2) Ensure that the reliability program document and the operator/applicant's
procedures define the activities and responsibilities of each organizational element (Engineering, Quality Control, Flight Operations, etc.) and/or reliability control committee for enforcing policy and ensuring corrective action.

(3) Compare the operator/applicant's organizational structure and personnel duties and responsibilities with the requirements in the contractual agreement and the reliability program.

G. Evaluate the Data Collection System

(1) Ensure that the contractor's program fully describes the data collection system as it relates to the aircraft, components, and/or systems to be controlled. The program must:
   * Address the flow of information
   * Identify any sources of information
   * Specify the steps of data development from source to analysis
   * Describe the organizational responsibilities for each step of data development

(2) Ensure the program includes samples of data to be collected, such as reports for the following:
   * Powerplant disassembly and inspection
   * Component condition
   * Mechanical delay and cancellation
   * Flight log
   * Premature removal
   * In-flight
   * Confirmed failure
   * Internal leakage
   * Engine shutdown

(3) Verify that the operator's manual includes procedures for collecting the required data and sending it to the contractor in accordance with the contractual arrangement. The required data should include corrective actions as well as shop repair records for work performed away from the contractor's facility.

H. Evaluate Methods of Data Analysis and Application to Maintenance Controls. Ensure the data analysis system includes the following:

(1) One or more of the types of action appropriate to the trend or level of reliability experienced, such as:
   * Actuarial or engineering studies employed to determine a need for
maintenance program changes
* Maintenance program changes involving inspection frequency and content, functional checks, overhaul procedures, and time limits
* Aircraft, aircraft system, or component modification or repair
* Changes in operating procedures and techniques
(2) Effects on maintenance controls, such as overhaul time, inspection and check periods, and overhaul and/or inspection procedures
(3) Procedures for evaluating critical failures as they occur
(4) Documentation required for maintenance program changes, modifications, special inspections, or fleet campaigns. The contractor's manual must provide procedures for retaining these documents.
(5) A corrective action program that shows the results of corrective actions in a reasonable period of time. Depending on the effect on safety, a "reasonable" period of time can vary from immediate to the time period of an overhaul cycle.
(6) A description of statistical techniques used to determine operating reliability levels
(7) Procedures to inform the operator/applicant of changes to maintenance controls
(8) Data analysis that considers the past experience of both the contractor and the operator/applicant
(9) An adequate, timely flow of information between the contractor and the operator/applicant

I. Evaluate operator/applicant's manual. Ensure the operator/applicant has manual procedures to accomplish the following:
(1) Performing corrective action through the person responsible
(2) Notifying persons responsible for taking corrective action
(3) Informing the contractor when corrective action changes were made and the extent of those changes
(4) Follow up to ensure corrective actions taken are effective

NOTE: A corrective action is effective if the out-of-limit condition is brought back to an acceptable level of performance.

J. Evaluate procedures for revising the Reliability Program. Ensure there are procedures for the contractor to obtain CAA approval before changing any of the following elements of the reliability program:
* Performance standards
* Data collection
* Data analysis system
* Process/task
* Procedures/organization concerning program administration
* Changes from alert-type programs to non alert-type programs or vice versa
* Adding or deleting aircraft, components, or systems

**NOTE:** Changes to these aspects of the reliability program must be coordinated between the Senior Airworthiness Inspectors assigned to the operator/applicant and the contractor.

K. Evaluate procedures for revising Performance Standards

(1) Ensure the contractor's procedures specify the organizational elements responsible for monitoring and revising the performance standard and the content of those revisions. Performance standards should be revised when they are not responsive or sensitive enough to reflect changes in actual performance.

(2) If the operator/applicant submits a program which does not incorporate statistical performance standards or which deviates significantly from the states standards (e.g. AC 120-17), contact the contractor's assigned Airworthiness Inspector.

(a) Examine the basis for the deviations and the integrity of the program and determine if any restrictions apply.

(b) If unresolved issues about the contractor's program remain, contact head office for guidance.

L. Evaluate definitions: Verify that the reliability program clearly defines unique terms, acronyms, and abbreviations as applied to the program.

M. Evaluate Program Displays and Status of Corrective Action Programs: Ensure that the contractual agreement or the contractor's manual requires the contractor to provide the operator with reports that reflect performance experience and corrective action status.

N. Evaluate Procedures For Maintenance Control Changes. Verify that the contractor's reliability program document:

(1) Describes the procedures for maintenance control changes to the reliability program

(2) Identifies the organizational elements responsible for preparing reports that justify maintenance control changes. At least two separate organizational elements are required, one of which exercises inspection or quality control responsibility for the operator/applicant.

(3) Specifies the processes used to determine maintenance control changes, such as sampling, functional checks, bench checks, decision tree analysis, and unscheduled removal

(4) Provides procedures to cover all maintenance program activities controlled by the program
(5) Recognizes critical failures and contains procedures for taking corrective actions

(6) Provides procedures to ensure that any maintenance interval adjustments will not interfere with ongoing corrective actions

(7) Contains procedures for notifying the Head Office when time limitations adjustments or other program changes occur

O. Review Contractual Arrangement. Ensure the contract:

(1) Identifies participating parties

(2) Identifies applicable equipment

(3) Defines the responsibilities of both contracting parties

(4) Supports the responsibilities of the contractor specified in the reliability program

P. Inspect Contract Maintenance Facility. Determine if the contractor is capable of meeting its contractual obligations. Provide the district office with information necessary to perform the inspections, such as the contractual arrangement and operator/applicant’s manual procedures.

Q. Analyze the findings

(1) Record all deficiencies noted.

NOTE: If discrepancies are found in the approved reliability program, contact the contractor’s assigned Airworthiness Inspector to resolve the discrepancies.

(2) Determine appropriate corrective action(s) to be taken.

(3) Advise the operator/applicant of discrepancies. Agree on the corrective action to be taken.
Chapter 9

Approval of a Weight & Balance Program

9.1. BACKGROUND AND OBJECTIVES

This chapter provides guidance for evaluating an operator/applicant's weight and balance control program.

9.2 GENERAL

A. Approved weight and balance control procedures are the only means for an operator/applicant to authorize the use of other than known weights for crew, passengers, baggage, or cargo. The weight and balance control program, including loading schedules and charts, are approved on operations specifications by the Director. This program must be included in the operator/applicant's policies and procedures manual.

B. The operator/applicant may develop and submit for approval any method or procedure by which it can show that an aircraft:

* Is properly loaded according to approved configuration (loading schedules or charts)
* Will not exceed authorized weight and balance limitations during all ground and flight operations
* Will be periodically reweighed and its data reevaluated
* Will have its data recalculated, if changes necessitate

C. The operator/applicant's weight and balance control procedures may either be an independently controlled document which includes all the instructions and procedures for maintenance, operations, and baggage/cargo control, or it may be included in the manual.

9.3 ESTABLISHED WEIGHT AND CENTER OF GRAVITY (CG) LIMITS

A. During type certification, the aircraft manufacturer must flight test weight and balance under all conditions and establish center of gravity limits. These limits are approved by the State of design.

B. If an operator/applicant proposes an unusual or complex weight and balance program, or a program substantially different from the approved Aircraft Flight Manual or Pilot Operating Handbook, additional assistance should be requested.

9.4 LOADING PROCEDURES

A. Use of Average Passenger Weights. For some types of regular operations, average passenger and baggage weights may be authorized.

(1) Average weights may be determined by actually weighing passengers and baggage and documenting the weights. Average weights must be based on acceptable data collected during actual operations.

(2) Generally, average weights for operations in warm climates are lighter than
those in colder climates. In establishing average passenger and baggage weights, operating environment must be considered. For example, clothing worn or carried in colder climates may affect the established weight.

**NOTE:** The average passenger and baggage weights in found in documents such as FAA Advisory Circular 120-27, Aircraft Weight and Balance Control, is for guidance only and must be evaluated for applicability to individual operators in the various countries they operate in.

B. Nonstandard Weight Groups. Average weights are not suitable for groups that tend to be heavier or lighter than the average. The operator/applicant must use actual weights for loading nonstandard weight groups and their baggage (such as athletic squads, military personnel, and children's groups).

C. Carry-on Baggage. Procedures must be provided for controlling carry-on baggage.

(1) Carry-on baggage must be limited to articles that may be placed in overhead compartments or under seats. No article may be placed in an overhead compartment that causes the weight limit of the compartment to be exceeded.

(2) Carry-on baggage weight must either be accounted for in the same manner as checked baggage or be added to the passenger weight.

(3) Operators using average weights for computing weight and balance should reevaluate carry-on baggage weight at least once per year.

**9.5 AIRCRAFT WEIGHTS**

A. Weighing of Aircraft

(1) The frequency of weighing aircraft operated under light aircraft operating rules may be at set intervals of 3-5 years. Both the operator/applicant's operations specifications and manual must reflect this requirement.

(2) Aircraft operated under heavy aircraft operating rules are not normally required to be weighed every 5 years however if the operator has a properly controlled weight control program approved by the Director this requirement may be extended.

B. Use of Fleet Weights. A fleet generally is considered to be three or more aircraft of the same model and configuration. This allows realistic averages to be determined.

(1) Aircraft operating under fleet weights must be weighed in accordance with the operator/applicant's instructions. The operating weights and center of gravity position must be within established limits. The use of fleet weights is authorized by operations specifications.

(2) An operator's empty fleet weight is determined by averaging aircraft weights as follows:

C. Scales used to weigh passengers, aircraft, cargo, and baggage must be calibrated and traceable to a national standard. Calibration must be performed in accordance with the civil authority for weights and measures having jurisdiction over the area in which the scales are used. The frequency of testing depends on use and handling.
9.6 CONTRACTORS

An operator/applicant may use a contractor to weigh items required to be weighed. However, the operator/applicant is responsible for ensuring the contractor complies with the operator/applicant's approved weight and balance control program. This includes ensuring scales are calibrated and tested in accordance with the operator/applicant's Policies and Procedures Manual.

9.7. EVALUATION PROCEDURES

A. Coordinate with operator/applicant. Operator/applicant must submit the following for review:

* Manual or revision
* Weight and Balance Program document (if not part of manual)
* Pertinent company procedures
* Instructions for completing forms used in aircraft weight control and aircraft loading
* Mathematical justification for loading provisions or schedules

B. Review the Operator/Applicant’s Manual/Program document. The manual must include procedures, levels of authority, and information appropriate to (National Requirements). In addition, the following must be included:

(1) Manual introduction, to include:

* Description of the philosophy and the goals of the manual
* Description of the division of contents between volumes, if more than one volume
* List of effective pages, including dates

(2) Manual revision and distribution procedures, to ensure:

* Current information is provided to all manual holders
* Manuals are available to maintenance, operations and ground personnel and are furnished to the Director

(3) Definitions of all significant terms used in the program. The definitions must reflect their intended use. Acronyms or abbreviations unique to the manual must also be defined.

(4) Description of the organizational unit responsible for the control and maintenance of the weight and balance program, to include:

* Definitions of lines of authority
* Description of the support structure

(5) Job descriptions for all elements

(6) Training programs that include the following:
(7) A means of documenting and retaining individual training records

(8) Procedures for:

* Determining standards and schedules for calibration of aircraft scales
* Pre-weighing instructions and requirements
* Determining which aircraft are to be weighed
* Establishing and maintaining equipment lists for each aircraft
* Recording the type and serial number for each scale used, airplane weight, residual fluids, and scale tare weights
* Initial weighing of aircraft
* Monitoring and adjusting individual aircraft or fleet, empty weight and center of gravity
* Periodic re-weighing of aircraft
* Ensuring aircraft are configured in accordance with approved data

(9) A loading schedule consisting of graphs/tables or a special loading schedule for a calculator or computerized program. These schedules must ensure pertinent data is available concerning all probable weight and balance conditions of the aircraft.

(10) A load manifest on which all required loading information shall be entered by personnel responsible for weight and balance control, including procedures for:

* Completing the load manifest
* Ensuring load manifest is carried on the aircraft
* Retaining the load manifest for the time periods specified in the (National Regulations)
* Distribution of the load manifest in accordance with (National regulations)

(11) Procedures to be used by crew members, cargo handlers, and other personnel concerned with aircraft loading, for the following:

* Distribution of passengers
* Distribution of fuel
* Distribution of cargo
* Verification and acceptance of actual cargo weights as listed on a bill of lading

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(12) A drawing of each cargo and/or passenger configuration to include emergency equipment locations

(13) Mathematical justification for loading provisions or schedules. This may be included under separate cover and not as part of the company manual.

(14) An alternate procedure for allowing manual computations, if a computerized weight and balance program is utilized

(15) Procedures for a weight range system, if applicable, that ensures:

(a) The range is typical of passengers carried on similar operations

(b) Computations for critical load considerations support the ranges

(c) Personnel responsible for loading the aircraft are required to prepare appropriate loading records

(d) The system includes methods for loading passengers whose weights are outside the range

(e) Loading records indicate the number of passengers within the stated range and account for passengers that do not fall within the range

(16) A system for loading nonstandard weight groups, such as athletic squads or military groups and their baggage, which must utilize actual weights for both passengers and baggage

(17) Procedures to verify actual weight of cargo

(18) Standards and schedules for calibration of commercial scales used to determine baggage/cargo weights

(19) Procedures to ensure that carry-on baggage is limited to articles which may be placed in overhead compartments or under seats. Carry-on baggage weight must be accounted for in the same manner as checked baggage or added to the average passenger weight.

C. Review Operator/Applicant’s Operations Specifications. Review the draft operations specifications to ensure that operations specifications Paragraph E include the following:

(1) Aircraft make/model/series

(2) Type of loading schedule

(3) Loading schedule instructions for:

* Passenger and crew (average or actual weight)

* Baggage (average or actual weight) and cargo (actual)

* Nonstandard weight groups

(4) Weight and balance control procedures
NOTE: The above items must be referenced by indicating the locations of the same items in the operator/applicant's manuals, e.g., volume, chapter, etc.

D. Analyze the results. Upon completion of review, analyze the results and determine whether the operator/applicant's manual and operations specifications meet all requirements.
10.1 OBJECTIVE

The chapter provides guidance for evaluating an applicant's procedures for utilizing, preserving, and retrieving the maintenance records as required by (insert appropriate State Regulation).

10.2 GENERAL

To comply with the maintenance recording requirements of the States Aviation Regulations, the applicant's maintenance manual must identify and contain procedures to complete an applicable documents used by the applicant.

A. Current Airworthiness Directive Status. The applicant must keep a record showing the current status of applicable Airworthiness Directives (ADs), including the method of compliance.

(1) This record shall include the following:
   * A list of ADs applicable to the aircraft
   * The date and time in service or cycles, as applicable
   * The method of compliance
   * The time in service or cycles and/or date when the next action is required (if it is a recurring AD)

(2) An acceptable method of compliance description should include one or more of the following:
   * Reference to a specific portion of the AD
   * A manufacturer's service bulletin, if the bulletin is referenced in the AD
   * Another document generated by the applicant that shows compliance with the AD, such as an Engineering Order (EO) or Engineering Authorization (EA)

(3) When an Engineering Order/Engineering Authorization is used, the details must be retained by the applicant. If the Engineering Order/Engineering Authorization also contains the accomplishment instructions and sign-off, it must be retained indefinitely.

(4) An applicant may apply for an alternate method of compliance for accomplishing ADs. Alternate methods of compliance must be approved by the Director and will apply only to the applicant making the application.

(5) The applicant's manual must have procedures to ensure compliance with new and emergency ADs within the given time limits. The procedures must ensure that the individuals responsible for implementation during other than during routine duty hours are notified, as necessary.
(6) The document that contains the current status of ADs / method of compliance may be the same as the record of AD accomplishment, although the retention requirements are different.

(a) The record of AD accomplishment must be retained with the aircraft indefinitely

(b) The AD method of compliance record will only be retained until the work is superseded /repeated or until one year after the work is performed

B. Total Time in Service Records

(1) Although the NAA may not specifically call for total time in service records of engines, propellers and rotors, it should require a record of life-limited parts for these components. The only way to accomplish this is by keeping records for total time in service.

(2) Total time in service records may consist of aircraft maintenance record pages, separate component cards or pages, a computer list, or other methods as described in the applicant's manual.

C. Life-Limited Parts Status Records. (Appropriate State Regulation) requires records for components of the airframe, engine, propellers, rotors, and appliances that are identified to be removed from service when the life limit has been reached.

(1) The current life-limited status of the part is a record indicating the operating time limits, total number of hours or accumulated cycles, or the number of hours or cycles remaining before the required retirement time of the component are reached. This record must include any modification of the part in accordance with ADs, service bulletins, or product improvements by the manufacturer or applicant.

(2) The following are not considered a current life-limited status record:
   * Work orders
   * Maintenance installation records
   * Purchase requests
   * Sales receipts
   * Manufacturers documentation of original certification
   * Other historical data

(3) Whenever the current status of life-limited parts records cannot be established or has not been maintained (e.g., a break in current status) and the historical records are not available, the airworthiness of that product cannot be determined and therefore it must be removed from service.

D. Airworthiness (Maintenance) Releases

(1) When maintenance, preventive maintenance, or modifications on an aircraft
are performed, an airworthiness release or log entry must be completed prior to operating the aircraft. Using the procedures described in the manual, the applicant must be able to retain all of the records necessary to show that all requirements for the issuance of an airworthiness release have been met.

E. Overhaul List: The applicant is required to develop manual procedures for recording the time since the last overhaul of all items installed on the aircraft that are required to be overhauled on a specified time basis. The items requiring overhaul are listed either on the operations specifications or in a document referenced to in the operations specifications or CMM.

   (1) The overhaul list includes the actual time or cycles in service since the last overhaul of all items installed on the aircraft. If continuity cannot be established between overhaul periods, the last overhaul records must be reviewed to reestablish the currency of the overhaul list.

   (2) The overhaul list refers to the time since the last overhaul of an item and must not be confused with an overhaul record, which requires a description of the work and identification of the person who performed and/or approved the work.

F. Overhaul Records

   (1) A record must be made whenever an item of aircraft equipment is overhauled and must include the following:

       * A description of the work performed or reference to data acceptable to the (Director)

       * The name of the person performing the work

       * The name or other positive identification of the individual approving the work

   NOTE: A return to service tag does not constitute an overhaul record.

   (2) The applicant must retain the record and be able to make it available to the (Director) upon demand. The overhaul records shall be retained until the work is superseded by work of equal scope and detail.

G. Current Aircraft Inspection Status. The applicant is required to retain a record identifying the current inspection status of each aircraft.

   (1) This record shall show the time in service since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.

   (2) Inspection work packages or routine and non routine items generated while performing any part of the inspection program must be retained as follows:

       * For one year after the work is performed

       * Until the work is repeated or superseded by other work

H. Major modification and Major Repair. Applicants are required to retain records of
current major repairs and major modifications that are accomplished on the following:

* Airframe
* Engine
* Propeller
* Rotor
* Appliance

(1) Major modifications must be listed with the date of modification and a brief description of the work accomplished. The manual must have procedures for the following:

* Extracting the information required for the list from the actual modification record of accomplishment
* For transmitting an modification report to the local CAA office

(2) The manual must contain procedures for retaining a report of each major repair and making it available for inspection by the CAA.

10.3 APPROVAL PROCEDURE
A. Review the Applicant's Maintenance Manual

(1) Ensure that the necessary procedures exist in the applicant's manual to ensure a suitable system for creating, preserving and retrieving required records.

(2) Ensure that all records will contain the following information, as applicable:

* Description of the work performed (or reference to data acceptable to the (Director))
* Name of the person(s) performing the work
* Name or other positive identification of the individual approving the work.

B. Review the applicant's manual's procedures. Review the applicant's record keeping procedures to ensure that the requirements of (Appropriate State Regulation) are met for the following:

(1) Airworthiness Release Records. Ensure the following:

(a) Airworthiness release records will be retained for one year after the work is performed or until the work is repeated or superseded

(b) The applicant's manual identifies the person(s) authorized to sign an airworthiness release

(2) Flight Maintenance Records. Ensure that procedures provide for the following entries:

* Flight discrepancies to be entered at the end of each flight
Corrective actions and certification, per manual procedures

Certifications for Duplicate Inspection, according to manual procedures by authorized personnel

Minimum Equipment List (MEL) deferment per the manual procedures

(3) Total Time in Service Records

(a) Evaluate the method of recording total time in service of airframes. This record must show the current time in service in hours.

(b) Ensure that procedures are in place to retain the records until the aircraft is sold and that the records will then be transferred with the aircraft.

(4) Life-Limited Parts Status

(a) Ensure that the applicant has procedures for tracking the current status of life-limited parts for each airframe, engine, propeller, rotor, and appliance, to include the following information:

* Total operating hours (including calendar time)/cycles accumulated
* Life limit (total service life)
* Remaining time/cycles
* Modifications

(b) Ensure that procedures are in place to retain the records until the aircraft is sold and are then transferred with the aircraft.

(5) Time Since Last Overhaul Records. Ensure that the manual includes a method/procedure for updating this document from the overhaul records and ensuring that this document accompanies the aircraft upon sale.

(6) Overhaul Records

(a) Ensure that the manual describes how the applicant will document the last complete overhaul of each airframe, engine, propeller, rotor and appliance. The overhaul record should include the following information:

* Disassembly data
* Dimensional check data
* Replacement parts list
* Repair data
* Reassembly/test data
* Reference to data including overhaul specifications

(b) Ensure that these records will be retained until the work is superseded by work of equivalent scope and detail.
(7) Current Aircraft Inspection Status

(a) Evaluate the method the applicant will use to record the time in service since the last inspection.

(b) Determine if procedures ensure that these records are retained until the aircraft is sold and are then transferred with the aircraft.

(8) Airworthiness Directive (AD) compliance. Evaluate how the applicant will comply with the record keeping requirements of the ADs. The procedures must generate a record that contains the following data:

(a) Current status. Ensure that the current status data will include the following:
   * A list of all ADs applicable to the aircraft
   * The date and time of compliance
   * The time and/or date of next required action (if a recurring AD)

(b) Method of compliance. Ensure that this data will include either a record of the work performed or a reference to the applicable section of the AD.

   **NOTE:** This data must be retained until the aircraft is sold and transferred with the aircraft.

(9) Major Modification Records

(a) Evaluate the manual procedures to ensure that the applicant prepares and maintains a list of current major modifications to each airframe, engine, propeller, rotor, and appliance.

(b) Ensure that the list includes the following information:
   * The date of the modification
   * A brief description of the modification

(10) Major Repair Records. Evaluate the manual procedures to ensure that the applicant prepares and maintains a report of all major repairs to each airframe, engine, propeller, rotor, and appliance.

10.4 **ANALYZE THE FINDINGS.** Evaluate all deficiencies to determine if corrective actions will be required.
Chapter 11
Lease and Interchange of Aircraft

1. BACKGROUND

1.1 The material in this part is intended to provide guidance to Airworthiness Inspectors in meeting their responsibilities and the states relating to continuing airworthiness when they are involved, either representing the State of the Operator or the State of Registry, in the transfer of aircraft under lease, charter or interchange arrangements. The responsibilities of States in these circumstances are referred to in Note I which precedes Chapter 3 of Annex 6, Part I and the Note which precedes Part II of Annex 8.

1.2 The entry into force of Article 83 bis of the Chicago Convention has created the opportunity for the State of registry to delegate certain functions and duties. However, the purpose of the material in this document is to draw the attention of the two airworthiness authorities involved, the State of Registry and the State of the Operator, to problems directly concerning continuing airworthiness which have to be considered when such transfers occur, irrespective of Article 83 bis.

1.3 Authorities should give due consideration to the objectives of continuing airworthiness and to the transfer of information as required in:

a) Annex 6, Part I, 8.6, "Modifications and repairs";
b) Annex 6, Part I, 8.4, "Records";
c) Annex 6, Part I, 11.3, "Maintenance program"; and
d) Annex 8, Part II, 4.2, "Information related to continuing airworthiness of aircraft".

In doing so, authorities should also take into account the type/length of transfers, etc., and should develop administrative procedures and arrangements between the States involved to ensure that the continuing airworthiness of the aircraft is maintained.

1.4 Chapter 10 of ICAO Doc 8335, Manual of Procedures for Operational Inspection, Certification and Continued Surveillance advises of legal and practical operational problems to be considered by the authorities in the certification of an operator proposing to utilize leased aircraft.

1.5 Irrespective of the various types of arrangements and categories of lease, charter and interchange (Doc 8335), this part will discuss the following issues in relation to the transfer of aircraft between the State of Registry and the State of the Operator:

a) acceptance of the "type design";
b) maintenance;
c) information on faults, malfunctions and defects and other occurrences;
d) mandatory continuing airworthiness information;
2. ACCEPTANCE OF THE TYPE DESIGN

2.1 The laws of the State of Registry generally prescribe the airworthiness and the design-related operational requirements for aircraft registered in that State and operated by an operator under its jurisdiction. However, the laws of the State of the Operator may also require that foreign-registered aircraft utilized by operators under its jurisdiction comply with the same airworthiness and design-related operational requirements, as if they were registered in that State.

2.2 Notwithstanding the above, the States of Registry and of the Operator should, when prescribing the airworthiness and design-related operational requirements, give due consideration to the period of time for which the aircraft is transferred.

2.3 Resulting from the above, the following issues should be considered when an aircraft is transferred from the State of Registry to the State of the Operator:

   a) The differences between the type certification basis of the State of Registry and that of the State of the Operator;

   b) The differences between the design-related operational requirements of the State of Registry and those of the State of the Operator; and

   c) The respective responsibilities of the State of Registry and the State of the Operator with respect to the approval of:

      1) changes to the type design, including those required to take into consideration the differences stated in a) and b); and

      2) repairs which require a design approval before implementation.

2.4 The responsibility that the aircraft, and any modification to it, complies with an approved design is in general that of the State of Registry. To preserve this responsibility, the State of the Operator should not endorse the implementation of any change without prior approval by the State of Registry.

2.5 To discharge their respective functions, States could enter into bilateral airworthiness and transfer of aircraft arrangements part of which describe procedures for:

   a) the approval of the changes to the type design;

   b) the performance and the certification of the changes; and

   c) the record-keeping of the changes.

   d) any transfer of the responsibilities referred to in 1.1, between the State of Registry and that of the Operator.

3. MAINTENANCE

3.1 Although the maintenance programme is usually approved by the State of Registry (Annex 6, Part I), the legislation of a State may require it to approve the maintenance programme for all aircraft operated by the operators of that State. Other factors may, by necessity or for convenience, lead to the use of a third State's maintenance
programme, in the case of transferred aircraft.

3.2 Some of the factors influencing the selection of the maintenance to be applied when aircraft are transferred are:
   a) the period of time for which the aircraft is transferred;
   b) the differences between the maintenance requirements of the State of Registry and those of the State of the Operator and the compatibility of their approved maintenance programmes;
   c) the absence of requirements regarding the approval of the maintenance programme by the State of the Operator and/or of the State of Registry; and
   d) the distance between the place where the aircraft is operated and the State of the Operator, i.e. the aircraft may be operated in a third State for the duration of the transfer.

3.3 Arrangements and procedures regarding the maintenance, the performance and certification of maintenance, including the signing of maintenance releases and the record-keeping should be acceptable to both the State of Registry and the State of the Operator. These arrangements and procedures could be developed on a case-by-case basis or be the subject of bilateral airworthiness and/or transfer arrangements.

3.4 If the agreement is determined to be a wet lease, the lessor normally exercises operational control over the aircraft and the responsibility for the airworthiness and operational oversight of the airplane will remain with the State of Registry. If the agreement is in the nature of a dry lease, then responsibility for operational control will normally rest with the lessee, and it may be advantageous for the State of Registry to enter into agreement with the State of the operator to transfer or share various facts of operational and airworthiness oversight. However, leasing agreements are often very complex instruments wherein the line between wet and dry is blurred and arguments for which operator should exercise day to day operational control are not clear cut. For example, flight crews may be comprised of a mix of personnel from both the lessor and lessee.

3.5 Whatever the case, the authorities will firmly establish, through written agreements with each other, which State will have the responsibility for every facet of operational and airworthiness oversight of the leased aircraft. All responsibilities must be considered and assigned: those associated with the State of Registry, and those associated with the State of the operator of the airline which has operational control.

3.6 Historically there have been a number of difficulties associated with the maintenance of transferred aircraft. To facilitate transfers in a safe and efficient manner, expanded guidance on maintenance aspects is contained in Appendix A to this Part.

4. INFORMATION ON FAULTS, MALFUNCTIONS AND DEFECTS AND OTHER OCCURRENCES

4.1 Annex 8, Part II, requires the State of Registry to ensure that there exists a system
whereby information on faults, malfunctions, defects and other occurrences is transferred to the organization responsible for the type design. Furthermore, the same document requires contracting states to establish which type of service information is to be reported by operators, organizations responsible for type design and maintenance organizations.

4.2 It is clear from above that the State of Registry is responsible for ensuring the transfer of information on defects to the organization responsible for the type design. For an operator of an aircraft subject to a transfer, it may not be appropriate, convenient or enforceable to report defects according to the system of the State of Registry. Therefore specific arrangements between the State of Registry and the State of the Operator should be developed to ensure that the information on defects for the aircraft is transferred to the organization responsible for the type design.

4.3 At the time an aircraft is transferred the two authorities and the operators involved should decide which reporting system and procedures apply, to ensure that the information is transmitted to the organization responsible for the type design and, as required, to the State of Registry.

4.4 Some of the factors influencing the selection of the system to be used for reporting information on defects, when aircraft are transferred, are:

a) the period of time for which the aircraft is transferred;

b) the compatibility/differences between the reporting system of the State of Registry and that of the State of the Operator;

c) the absence of a reporting system in the State of the Operator and/or the State of Registry; and

d) the regulatory requirements of the States involved.

5. MANDATORY CONTINUING AIRWORTHINESS INFORMATION

5.1 In general the State of Registry has prime regulatory responsibility for the airworthiness of the aircraft. If the State of Registry is also the State of Design, it will normally be the originator of mandatory continuing airworthiness information, such as airworthiness directives (AD).

5.2 If the State of Registry is not the State of Design, it should have procedures in place to respond to mandatory continuing airworthiness information received from the State of Design and should decide whether the information will be made mandatory in its State. When made mandatory, the State of Registry will either issue its own mandatory information or require compliance with issued by the State of Design.

5.3 Notwithstanding 5.1 and 5.2, the State of Registry, without being the State of Design, may issue mandatory continuing airworthiness information applicable to aircraft registered in its State.

5.4 Similarly, the State of the Operator may, in certain circumstances, issue mandatory continuing airworthiness information applicable to aircraft operated and/or registered in its State. In such cases 2.4 should also be considered before the implementation of the information.
5.5 Where an aircraft is transferred from the State of Registry to the State of the Operator, irrespective of the fact that either State could be the State of Design, unnecessary cost may arise if the State of Registry and the State of the Operator impose different mandatory continuing airworthiness information on the same aircraft. It is therefore recommended that:

a) the authorities of the State of Registry and of the State of the Operator in consultation with the registered owner and the operator of transferred aircraft should determine which of the States' mandatory continuing airworthiness information will apply to the transferred aircraft, before they enter into a transfer agreement; and

b) the states involved in aircraft transfer should develop administrative procedures to this effect.

5.6.1 The intent of 5.5 can be achieved, by a general 'agreement or arrangement on aircraft transfer" between the States or authorities involved or by individual arrangements at the time of transfer.

6. DISTRIBUTION OF MANDATORY CONTINUING AIRWORTHINESS INFORMATION

6.1 The mandatory continuing airworthiness information issued by the State of Registry in the form of an AD, or equivalent, or issued by the State of Design and made mandatory by the State of Registry, should be made available to affected operators by the State of Registry. Some States disseminate this mandatory information directly to each registered owner of an affected aircraft on their registers and rely on the registered owner to transmit the information to the operator. Other states make the information available through the offices of their airworthiness authorities or also publish the information and make it available by subscription.

6.2 As described in 5.4, the mandatory continuing airworthiness information issued, in certain circumstances, by the State of the Operator, and made mandatory on aircraft registered in another state and operated in its state (State of the Operator), should be made available to affected operators by the State of the Operator.

6.3 When an aircraft is transferred to another state, distribution of mandatory continuing airworthiness information by the State of Registry may be accomplished by making the mandatory documents available to the registered aircraft owner, who should be responsible for transmitting them to the aircraft operator. If the State of Registry has an agreement with the State of the Operator to provide surveillance and assistance, or if the State of the Operator wishes to be kept informed regarding transferred aircraft operated by its operators, then the State of Registry should also transmit the mandatory continuing airworthiness information documents to the State of the Operator.

7. APPENDICES

7.1 As stated in 3.4, Appendix A entitled "Maintenance aspects of aircraft transfer" is included as guidance material.

7.2 In most of the issues referred to in 1.4 and discussed in this chapter, the State of Registry and the State of the Operator, to facilitate the discharge of their respective
responsibilities by transferring certain of their functions, could enter into a Bilateral Airworthiness Agreement, Maintenance Agreement or Lease Agreement, Technical Arrangement, or Memorandum of Understanding.

**Note.** Examples of such agreements are given in Appendices B, C, D and E. They are verbatim copies, without names, of agreements and arrangements in effect between States or Authorities. They are included as examples and could be adapted, including their terminology, to particular situations.

7.3 Similar arrangements could also be formulated by an exchange of letters between authorities. In formulating these arrangements, due consideration should be given by each state to its knowledge of the airworthiness system of other state.
1. INTRODUCTION

The content of this appendix is intended to facilitate the leasing and/or transfer of aircraft in a safe and efficient manner. Historically there have been a number of difficulties associated with the transfer and leasing of aircraft, usually caused by:

- differing national airworthiness standards;
- differing national operational standards;
- differing build standards; and
- non-standard application of the above.

2. GENERAL

2.1 This appendix is intended to define clearly the minimum requirements for aircraft owners, airlines or regulatory authorities who are planning or preparing to transfer or lease an aircraft across international boundaries.

2.2 The material contains recommended methods and practices which could be used during preparation and organization of an aircraft lease or an international aircraft transfer. The proposed requirements are intended to be used as minima; additional requirements may be demanded by the lessor/buyer.

2.3 Documentation should be provided to establish the national regulations under which the maintenance and operation of the aircraft have been carried out. This should also include, where applicable, details of any deviations from, or exemptions issued against, those regulations.

2.4 The maintenance programme should be identified to the following standard:

a) **Approval**: The approval or acceptance of the maintenance programme by the associated regulatory authority should be identified;

b) **Traceability**: The maintenance programme should be identified and be traceable to its approved minimum requirements standard, e.g. Maintenance Review Board (MRB) Report, the manufacturer's recommended maintenance programme or recommended tasks. In the event that the programme fails to meet the minimum requirement standard, all areas of such deficiencies should be identified and corrective action taken, on the aircraft or to the programme as necessary. The minimum standard is understood to mean only minimum required tasks and not the intervals; and

c) **Documentation**: A printed copy of the maintenance schedule should be provided which identifies all tasks and functions in such a manner as to permit traceability to the corresponding work cards. This includes sampling programme tasks.
3. RECORDS AND DOCUMENTATION

3.1 General

3.1.1 Consideration should be given to aircraft records and documentation as indicated in the following paragraphs.

3.1.2 Governing requirement

Prior to initiation of the lease or other transfer, representatives of both parties should co-ordinate the scope and content requirements of the technical logs and the aircraft technical log book which will eventually be required upon aircraft return or further transfer. The governing record-keeping regulation under which the aircraft records should be maintained should be determined prior to initiation of the lease or transfer.

3.1.3 Language

All aircraft records should be maintained in a language which is acceptable to the regulatory authority. For practical purposes another language may be used; however, a translation to the acceptable language should be provided at the time of transfer, if required by the regulatory authority.

3.1.4 Documentation requirements

3.1.4.1 Documentation requirements for incoming components and parts should be identified in the operator's manual to support its purchasing and receiving inspection functions. This includes, but is not limited to, documentation of airworthiness directives (AD) compliance, time on life-limits, descriptions of work performed and certification of new and repaired parts. Once these requirements are satisfied and the essential information is entered into the operator's records system, the only source documentation required to be retained is that necessary to:

a) satisfy the requirements of the responsible regulatory authority;

b) support the operator's continuing analysis and surveillance system; and

c) support future maintenance on the affected parts.

However, operators are advised to retain or archive documentation of AD compliance, life-limited part service times and other information which may be useful in the future.

3.1.4.2 When a used aircraft is introduced into an operator's fleet, the receiving operator should review the records to ensure they provide the current maintenance information necessary to phase the aircraft into the maintenance programme of the operator. This includes records such as the documentation of the last scheduled inspection, the current status of AD, life-limited parts and components, Supplemental Structural Inspection Document, damage-tolerance inspection status, Certification Maintenance Requirements, major repairs and major alterations.

3.1.4.3 If the aircraft is being transferred to another operator, the records from the transferring operator of the status of life-limited parts and AD, including the method of AD compliance, should be acceptable as valid unless obvious discrepancies are
apparent. The transferring operator should provide a written statement that the records are correct.

3.1.4.4 If the aircraft is being transferred from another state, it may be necessary to evaluate the previous operator’s maintenance scheduling and record-keeping system to ensure the validity of the records. The available records may vary depending on the country of origin. Therefore a means of assuring the integrity of the previous operator’s records system may be necessary. This may require communication between the two regulatory authorities concerned.

3.1.4.5 The following are recommendations for determining the validity of the current status of life-limited parts and AD compliance:

a) if the state of the operator is an ICAO signatory, the operator's records should meet ICAO requirements and a record of current status would be acceptable;

Note: ICAO record-keeping requirements are specified in Annex 6, Part I, Chapter 8 (Aeroplanes) and Part III, Chapter 6 (Helicopters)

b) a sampling check of visible ADs would be indicative of the accuracy of those records;

c) a sample check of source records for the record-keeping system of the transferring operator would indicate the quality of those records;

d) the state of the transferring operator’s shop records would be indicative of the integrity of the operator's record-keeping system;

e) significant errors or omissions in a records status report would indicate inadequate records and record-keeping system.

3.1.5 Part numbers

Records must accurately reflect the manufacturer's part number as applicable. In the event that the operator utilizes a part numbering system other than the manufacturer’s system, a complete cross-reference should be provided with the records. If alternative part numbers are recorded, technical substantiation should be available to support the part substitution.

3.1.6 Serial numbers

All components and assemblies controlled by serial numbers should have their serial numbers recorded in the maintenance records. In the event that the operator utilizes a serial numbering system other than the manufacturer’s system, a complete cross-reference should be provided with the records.

3.1.7 Dates

All records should be properly dated with reference to an installation or maintenance function accomplishment. If the date format is numeric, the system should use a day / month/year format to date the records.

3.2 Record-keeping requirements for airworthiness directives

3.2.1 The current status of applicable AD for a particular airframe, engine, propeller, rotor
or appliance should be maintained. This record should identify the particular airframe, engine, propeller, rotor or appliance; identify the applicable AD (including amendment number, if required); date (when the AD was accomplished, if required) and/or when the next recurring inspection (action) is due; describe the method of compliance (if more than one method is specified in the AD) and show the appropriate measuring parameters (hours, cycles and/or calendar times).

3.2.2 The requirements of the regulatory authority will determine the specific data required as part of a maintenance record. An operator is not required to retain actual work documents to show accomplishment of the work on a given airframe, engine, propeller, rotor or appliance to document AD compliance unless such records are otherwise called for by the requirements of the regulatory authority.

*Note:* Current status information is required to be maintained as long as the airframe, engine, propeller, rotor or appliance is used or intended to be used by the operator. ICAO requirements for retention of records are specified in Annex 6, Part I, Chapter 8 (Aeroplanes) and Part III, Chapter 6 (Helicopters).

3.3 Record-keeping requirements for life-limited parts

3.3.1 Each operator should maintain the current status of life-limited parts. If the operator obtained such parts new from the manufacturer, the current status will be based upon the operator’s in-service history of the part. If the part has been obtained from a previous operator, the current status will be based on the status from the previous operator plus the present operator’s in-service history. The current status of life-limited parts is required upon each transfer throughout the operating life of the part. When such parts are transferred, the previous operator should produce an in-service history for life-limited parts, irrespective of the operator’s governing regulations. When life-limited parts are transferred between operators, a written statement by the previous operator, attesting to the current status of life-limited parts, is an acceptable method of indicating prior operating service of the part(s).

3.3.2 When the records of current status for life-limited parts are lost or destroyed, an equivalent level of safety may be determined by consideration of other records available, such as technical records, utilization reports, manufacturer’s information or presentation of other evidence. If review of other available documentation reveals significant errors or omissions that prevent the development of a current status for the life-limited part(s), the part(s) in question should be retired from service. It is the operator’s responsibility to notify the regulatory authority when such records are lost or destroyed and to initiate an immediate search for records from which the current status of the life-limited part(s) can be determined.

3.3.3 Not all life-limited parts will necessarily be marked with part and serial numbers; for aircraft of United States manufacture, specific requirements for life-limited parts to be marked with part and serial numbers have only existed since the early 1980s. Operators must be able to track life-limited parts manufactured prior to the early 1980s although such parts may not be serialized items.

3.3.4 Operators may receive life-limited parts from a repair station that has a system to determine the current status of such life-limited parts. This system should be recognized as a factor in the substantiation of the current status of life-limited parts.
3.4 Transfer of records

3.4.1 When an aircraft, airframe, engine, propeller, rotor or appliance is transferred to a new operator the records of these products should accompany the transfer. Such records should include the current status of maintenance, AD and life-limited parts and should clearly identify the person responsible for the data in the report and the date associated with the records.

3.4.2 When an aircraft, airframe, engine, propeller, rotor or appliance is leased, the associated records should be transferred as if the transaction were a sale. By agreement between the lessee and the lessor, some records, such as work cards and inspection records, may be retained by the owner: however, the lessee has a responsibility to review the records retained by the owner and ensure that the summary information used to support the airworthiness of the item is complete and accurate.

3.5 Lost records

In the event that required maintenance records have been lost or destroyed, alternative proof must be provided that the tasks in question have been performed.

3.6 Service bulletins

All service bulletins that have been incorporated should be listed together with accomplishment dates. If options are available, the option complied with should also be indicated. When a service bulletin involves recurring action, the times and/or dates, as applicable, of the last action and the next action due should be provided.

3.7 Modifications/alterations

3.7.1 All modifications/alterations performed since the original aircraft delivery which are still existent on the aircraft should have been carried out in accordance with the requirements of the airworthiness authority of the State of Registry at the time of their incorporation.

3.7.2 A list of such modifications/alterations should be provided indicating their classification and supported by appropriate documentation. In the case of a major modification/alteration this documentation should include as a minimum:
   a) the document defining the modification/alteration;
   b) the certification basis; and
   c) the approval of the relevant authority.

3.8 Repairs

All major repairs performed since original aircraft delivery and which are still existent upon the aircraft should be listed and demonstrated to be in compliance with the requirements of the airworthiness authority of the State of Registry at the time of their incorporation. If additional action is required, e.g. recurring inspection, this should also be indicated.
4. DOCUMENT PRESENTATION

4.1 Presentation

A standard method of presenting the records is encouraged. It is recommended that the summary of records and other pertinent information be compiled into a book or other concise document in order to simplify, as much as possible, the record review process.

4.2 Recommended format

Section 1: Status summary and data certification

This section should begin with a statement of certification from the transferring operator or owner that the information presented is true and correct, including:

a) airworthiness certificate basis and status;

b) a general statement of the current status of non-repetitive airworthiness directives such as:

'All applicable airworthiness directives through (specify date, issue, etc.) have been incorporated as listed on the (specify name of operators) airworthiness directive summary (specify date) with the exception of those AD requiring initial or repetitive action.';

c) a general statement of the current status of repetitive airworthiness directives, such as:

"All AD listed on the (specify operator) certified airworthiness directive control summary dated (specify date) require initial or repetitive action at the date, time or cycles listed."

d) a statement of the extent of the operator's direct operational and maintenance control of the aircraft and a list of major repairs accomplished during that time, such as:

"This aircraft has been under the direct operational and maintenance control of (specify operator) since (specify date). During this time the aircraft underwent the following major repairs/modifications in accordance with approved technical data documented in the aircraft records. (List all major repairs/modifications)"

e) a statement regarding the accomplishment of the last major inspection, such as:

"The last (specify type of major inspection) was accomplished by (specify operator/maintenance organization) between (specify date) and (specify date) at (specify operator/maintenance organization) maintenance facility in (specify city, country). Airframe total hours and total cycles were"

f) a statement regarding the current status of the installed engines and any spare engines, such as:
"The following engines are currently installed on the aircraft with the total accumulated and remaining hours and cycles listed for each (List engines here.) The (specify operator) life-limited parts report has been prepared using the (list manufacturer's controlling document here), and reflect accurate times and cycles of the life-limited parts as of the engine time/cycles noted above.” and

Section 1: This section should be signed by the senior airline official responsible for aircraft maintenance record-keeping.

Section 2: The aircraft lease agreement

This section should contain a copy of the lease or sale agreement. Economic or monetary information may be deleted for the purposes of this presentation.

Section 3: Operating authority

This page should contain a copy of the operating authority issued by the responsible regulatory authority of the last operator. This is used to establish the rules under which the aeroplane was operated and maintained.

Section 4: Export Certificate of Airworthiness

This section should contain a copy of the Export Certificate of Airworthiness (if any).

Section 5: Current inspection status summary

This page should give a summary of the current inspection status of the aircraft at the time of transfer. It should list:

a) the aircraft total time;
b) the aircraft total cycles or landings;
c) the time and landings since the last major scheduled maintenance or inspection;
d) the scheduled major inspection intervals and the time remaining to the next inspection; and
e) the powerplants by position and serial number. The listing should show the time since new, cycles since new and the time and/or cycles remaining to the next life-limited part removal for each powerplant.

Section 6: Summary of current status of life-limited parts

This section should contain a listing of all the airframe and powerplant life-limited components/parts installed on the aircraft at the time of transfer. The listing should contain the name of the component/part, the installed location or position of the component/part, the component/part number, the component/serial number, the required retirement time of the component/part, the total number of hours or accumulated cycles and the number of
hours or cycles remaining before the required retirement time of the component/part is reached.

Section 7: Current status of Airworthiness Directives

This section should contain a listing of each airworthiness directive which is applicable to the aeroplane, powerplants, components and appliances. Recurring AD should be listed separately. The listing should contain:

a) the AD number and revision date;

b) a concise description of the required action;

c) the method of compliance;

d) the time in service and the date of AD accomplishment; and
e) for AD having requirements for recurring actions the date of AD accomplishment and when the next recurring action is due (date, hours, cycles, etc.).

Section 8: Aircraft maintenance programme integration

If the maintenance/inspection programme is to be changed for the aircraft, the integration or proration plan for the two programmes should be presented here. For an integration plan, a listing of each scheduled maintenance/inspection item under both the old and new programme should be shown along with the method of transfer or bridging from one to the other.

5. MINIMUM AIRWORTHINESS STANDARDS FOR LEASING AGREEMENTS

In the area of airworthiness standards, the lease agreement should ensure at least that:

a) the lessor and lessee are properly identified;
b) the aircraft subject to the lease agreement is identified by aircraft make and model, registration number and manufacturer’s serial number;
c) the effective dates of the lease are properly identified;
d) the person having operational control is specifically identified;
e) the State of Registry and the airworthiness code under which the aircraft will be maintained are identified;
f) the responsibilities for the accomplishment of maintenance in accordance with the designated airworthiness code are specifically identified;
g) the responsibilities for keeping the aircraft maintenance records in accordance with the designated airworthiness code are specifically identified; and
h) the maintenance/inspection programme that will be utilized is specifically identified.
Appendix B

Agreement on Airworthiness between
(Name of first party) and (Name of second party)

Note: This example covers the exchange of aeronautical products, the acceptance of airworthiness compliance and certification, the performance of modification and maintenance, the continuing airworthiness and mutual co-operation and assistance.

The (Name of first Party) and the (Name of second Party), hereinafter referred to as the 'Contracting Parties',

Whereas:

- each Contracting Party has determined that the standards and systems of the other Contracting Party for the airworthiness and environmental certification or acceptance of aeronautical products are sufficiently equivalent to its own to make an agreement practicable;

- each Contracting Party wishes to develop and employ procedures for granting airworthiness and environmental certification or acceptance of aeronautical products imported from the other Contracting Party so as to give as much recognition as practicable to technical evaluations, test results, inspections, conformity statements, marks of conformity and certificates accepted or issued by or on behalf of the airworthiness authority of the exporting party in granting its own domestic certification of such aeronautical products and

- each Contracting Party wishes, in the interest of promoting aviation safety and preservation of the environment, to foster co-operation and assistance between their airworthiness authorities in achieving common safety and environmental quality objectives. To establish and maintain airworthiness and environmental standards and certification systems which are as similar to those of the other Contracting Party as practicable and to co-operate in the reduction of the economic burden on aviation industries and operators arising from redundant technical evaluations, tests and inspections;

Therefore, having agreed on certain principles and arrangements in order to:

- facilitate the airworthiness and environmental certification, approval or acceptance by the airworthiness authority of the importing party of aeronautical products, including maintenance services, imported and exported between the two Contracting Parties;

- provide for the development of procedures between the two airworthiness authorities for these purposes and to facilitate the discharge of their responsibilities resulting from multinational design, manufacture, maintenance and interchange of aeronautical products involving the joint interests of the Contracting Parties in airworthiness and environmental certification;

- provide for co-operation in sustaining safety and environmental quality objectives;

The Contacting Parties agree as follows:
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ARTICLE I

Definitions
For the purpose of this agreement:

Additional technical conditions means the terms notified by the importing party for the acceptance of the type design of an aeronautical product or for the acceptance of an aeronautical product to account for differences between Contracting Parties in:

i) adopted airworthiness and environmental standards;

ii) special conditions relating to novel or unusual features of the aeronautical product design which are not covered by the adopted airworthiness and environmental standards;

iii) application of exemptions from, or equivalent safety findings to the adopted airworthiness and environmental standards;

iv) maintenance requirements;

v) mandatory airworthiness action taken to correct unsafe conditions.

Airworthiness criteria means criteria governing the design, performance, materials, workmanship, manufacture, maintenance and alteration or modification of aeronautical products as prescribed by the airworthiness authority of the importing party to enable it to find that the design, manufacture and condition of these aeronautical products comply with its own laws, regulations, standards and requirements concerning airworthiness.

Aeronautical product means any civil aircraft, or aircraft engine, propeller, appliance, material, part or component to be installed thereon, new or used.

Airworthiness authority means the national government organization of a Contracting Party responsible for regulating the airworthiness and environmental certification, approval or acceptance of aeronautical products.

Design-related operational requirement means operational requirements related to design features of an aeronautical product or data relating to its operation or maintenance that make it eligible for a particular kind of operation.

Environmental criteria means criteria governing the design, performance, materials, workmanship, manufacture, maintenance and alteration or modification of aeronautical products prescribed by the importing authority to ensure compliance with the laws, regulations, standards and requirements of the importing party concerning noise and emissions abatement.

Exporting party means the Contracting Party exporting a type design, a modification thereof, or an aeronautical product, under the provisions of this agreement.

Exporting authority means the airworthiness authority of the exporting party.

Importing party means the Contracting Party importing a type design, a modification thereof, or an aeronautical product, under the provisions of this agreement.
**Importing authority** means the airworthiness authority of the importing party.

**Maintenance** means actions to ensure the airworthiness of an aeronautical product.

**Modification** means making a change to the type design.

**Product airworthiness approval** means granting an airworthiness certificate, approval or acceptance, as appropriate, by or on behalf of an airworthiness authority for a particular aeronautical product to permit its operation or use consistent with applicable laws, regulations, standards and requirements.

**State regulating the airworthiness of an aircraft** means the Contracting Party responsible for issuing a Certificate of Airworthiness for an aircraft, or the Contracting Party responsible for the certification of an operator operating, under lease or charter, an aircraft which possesses a Certificate of Airworthiness issued by another State.

**Type design** means the description of all characteristics of an aeronautical product, including its design, manufacture, limitations and continued airworthiness instructions, which determine its airworthiness.

**Type design approval** means granting a certificate, approval or acceptance by or on behalf of a design of an airworthiness authority for the type design of an aeronautical product.

**ARTICLE II**

**Scope**

This agreement applies to:

a) the acceptance by the importing authority of the exporting authority's type design approval, including environmental approval, and at the option of the importing authority, of the exporting authority’s finding of compliance with the importing authority's design-related operational requirements for aeronautical products, where the exporting authority is:

1) the authority which has first taken responsibility for the type design approval of the aeronautical product; or

2) the authority which has assumed responsibility for the type design approval of the aeronautical product from a third authority with which both the importing authority and the exporting authority have in effect bilateral agreements or arrangements similar in scope to this agreement;

b) the acceptance by the importing authority of the airworthiness certification, approval or acceptance of aeronautical products exported from the territory of the other Contracting Party, including both new and used aeronautical products designed or manufactured partially or wholly in other states;

c) the acceptance by one airworthiness authority of maintenance, alterations or modifications performed under the authority of the other airworthiness authority on aircraft, or on aircraft engines, propellers, appliances materials, parts or components installed or suitable for installation in civil aircraft;
d) co-operation and assistance with respect to maintaining the continuing airworthiness of in-service aircraft;

e) exchange of information regarding environmental standards and certification systems;

f) co-operation in providing technical evaluations and assistance.

ARTICLE III

Acceptance of the type design approval

1. If the exporting authority, applying its own certification system, certifies to the importing authority that the type design of an aeronautical product or a change to an aeronautical product type design previously approved by the importing authority, complies with airworthiness and environmental criteria prescribed by the importing authority, the importing authority shall, in establishing compliance with its own laws, regulations, standards and requirements for granting type design approval, give the same validity to the technical evaluations, determinations, tests and inspections made by the exporting authority as if it had made them itself.

2. The importing authority shall prescribe the airworthiness and environmental criteria for the type design approval of any aeronautical product in terms of the laws, regulations, standards, requirements and certification system of the exporting authority together with any additional technical conditions it deems necessary.

3. The exporting authority shall assist the importing authority to become familiar with the aeronautical product to be imported and with the laws, regulations, standards, requirements and certification system applied by the exporting authority.

4. Notwithstanding 2, the importing authority may prescribe additional technical conditions to ensure that the aeronautical product meets the airworthiness and environmental standards equivalent to those which would be required for a similar aeronautical product, designed or manufactured in the territory of the importing party, at the time that the application was received, for the approval of the aeronautical product type design, by the exporting authority.

5. As soon as practicable after it has become familiar with the design of an aeronautical product, the importing authority shall notify the exporting authority of its requirements concerning airworthiness and environmental criteria for type design approval.

6. On request from the exporting authority, the importing authority shall promptly advise the exporting authority of its current design-related operational requirements.

7. If pursuant to agreement between them, the exporting authority certifies to the importing authority that the design of an aeronautical product or data on the design relating to the operations or maintenance of such aeronautical product comply with those design-related operational requirements prescribed by the importing authority, the importing authority, in establishing compliance with its own operational requirements, shall give the same validity to the technical evaluations,
determinations, tests and inspections made by the exporting authority as if it had made them itself.

ARTICLE IV

Acceptance of Aeronautical Product Airworthiness Certification

1. If the exporting authority certifies to the importing authority that an aeronautical product in respect of which type design approval has been issued or is in the process of being issued by the importing authority, conforms in construction to a type design description notified by the importing authority and is in a condition for safe operation, the importing authority shall give the same validity to the technical evaluations, determinations, tests and inspections made by the exporting authority as if it had made them itself on the date of the certification by the exporting authority.

2. The importing authority may, as it deems necessary specify or make additional inspections, at the time of its airworthiness and environmental certification, approval or acceptance of an aeronautical product.

ARTICLE V

1.1..1.1.1 Maintenance and performance of alterations or modifications

1. If maintenance or an alteration or modification is performed and certified under the authority of one airworthiness authority in accordance with its own approval system, on an aircraft which is under the airworthiness regulation of the other airworthiness authority, or on any aeronautical product designed for installation on such aircraft, the other airworthiness authority shall give the same validity to such maintenance, alteration or modification and certification as if performed or certified in its own territory provided it has, directly or by delegation, approved such maintenance or alteration or modification.

2. The Contracting Parties may jointly determine which of them will regulate the airworthiness of an aircraft registered in the territory of one Contracting Party that is operated by an operator of the other Contracting Party.

ARTICLE VI

1.1..1.1.1 Continuing airworthiness

1. The airworthiness authorities of both Contracting Parties shall co-operate in analysing airworthiness aspects of accidents and incidents related to aeronautical products to which this agreement applies.

2. In respect of aeronautical products designed or manufactured in its territory the exporting authority shall, where appropriate, specify any action it deems necessary to correct any unsafe condition of the type design that may be discovered after an aeronautical product is placed in service, including any actions in respect of components designed or manufactured by a supplier under contract to a pome contractor.

3. In respect of an aeronautical product designed or manufactured in its own territory, the exporting authority shall assist the importing authority in establishing
procedures deemed necessary by the importing authority for maintaining the continuing airworthiness of such aeronautical product.

4. Each airworthiness authority shall promptly inform the other of all mandatory airworthiness modifications, special inspections, special operating limitations or other actions which it deems necessary for maintaining the continuing airworthiness of relevant aeronautical products designed or manufactured in the territories of the Contracting Parties.

ARTICLE VII

Mutual co-operation and assistance

1. In respect of aeronautical products designed or manufactured in its territory, the exporting authority shall on request assist the importing authority in determining whether the design of major changes or repairs made under the control of the importing authority comply with the airworthiness and environmental standards under which such aeronautical products were originally approved by the exporting authority.

2. Each airworthiness authority shall apprise the other of all its relevant airworthiness and environmental laws, regulations, standards and requirements and of its airworthiness and environmental certification system.

3. Each airworthiness authority shall as soon as practicable notify the other of proposed significant revisions of its standards and system for airworthiness and environmental certification or approval, offer the other airworthiness authority an opportunity to comment and give due consideration to the comments made by the other airworthiness authority on the intended revisions.

4. Amendments to certification procedures for aeronautical products covered by this agreement shall be by agreement in writing between the airworthiness authorities.

5. The airworthiness authorities shall provide to each other such technical evaluation assistance as they agree is appropriate.

Interpretation

In the case of conflicting interpretations of the airworthiness or environmental criteria prescribed by the importing authority pertaining to certifications, approvals or acceptances under this Agreement, the interpretation of the importing authority shall prevail.

ARTICLE IX

Implementation

1. The airworthiness authorities may develop a schedule of implementation procedures for this agreement.

2. When such a schedule has been agreed between the airworthiness authorities, this agreement will be implemented in accordance with its provisions.

3. The airworthiness authorities will jointly review such schedule from time to time and may amend it as appropriate by written agreement.
ARTICLE X

1.1.1.1.1.1 Entry into force

This agreement shall enter into force on the first day of the second month following the day on which the Contracting Parties shall have notified each other that their legal requirements have been complied with.

ARTICLE XI

Termination

Either Contracting Party may at any time give notice by diplomatic note to the other Contracting Party, of its decision to terminate this agreement. The Agreement shall terminate twelve months following the date of receipt of the notice by the other Contracting Party, unless the said notice of termination has been withdrawn by mutual agreement before the expiry of this period.
Appendix C

Technical arrangement on Airworthiness between the Civil Aviation Authority (Name of first state) and the Civil Aviation Authority (Name of second state)

Note: This example covers the performance of modification and maintenance, the continuing airworthiness and mutual co-operation and assistance.

The Civil Aviation Authority of (Name of first State) and the Civil Aviation Authority of (Name of second State), hereinafter referred to as the 'Contracting Parties',

Whereas:

- each Contracting Party has determined that the standards and systems of the other Contracting Party for the airworthiness and environmental certification or acceptance of aeronautical products are sufficiently equivalent to its own to make an Arrangement practicable;

- in the interest of promoting aviation safety and preservation of the environment and with a view to fostering co-operation and assistance between their airworthiness authorities in achieving common safety and environmental quality objectives, establishing and maintaining airworthiness and environmental standards and certification systems which are as similar to those of the other Contracting Party as practicable and cooperating in the reduction of the economic burden on aviation industries and operators arising from redundant technical evaluations, tests and inspections;

Therefore, having agreed on certain principles and arrangements in order to:

- facilitate the airworthiness and environmental acceptance, by the airworthiness authority of a Contracting Party, of the maintenance services and certification of aeronautical products, operated or registered in the State of the other Contracting Party;

- provide for the development of procedures between the two airworthiness authorities for these purposes and for facilitating management of the emerging trend toward the interchange of aeronautical products involving the joint interests of the Contracting Parties in airworthiness and environmental maintenance services and their certification;

- provide for co-operation in sustaining safety and environmental quality objectives;

The Contracting Parties agree as follows:

ARTICLE I

Definitions

For the purpose of this arrangement;

An airworthiness criterion means criteria governing the design, performance, materials,
workmanship, manufacture, maintenance and alteration or modification of aeronautical products as prescribed by the airworthiness authority of the importing state to enable it to find that the design, manufacture and condition of these aeronautical products comply with its own laws, regulations, standards and requirements concerning airworthiness.

Modification means making a change to the type design.

Aeronautical product means any civil aircraft, or aircraft engine, propeller, appliance, material, part or component to be installed thereon, new or used.

Airworthiness authority means the national organization of a Contracting Party responsible for regulating the airworthiness and environmental certification, approval or acceptance of aeronautical products.

Design-related operational requirements means operational requirements related to design features of an aeronautical product or data on its design relating to its operation or maintenance that make it eligible for a particular kind of operation.

Environmental criteria means criteria governing the design, performance, materials, workmanship, manufacture, maintenance and alteration or modification of aeronautical products prescribed by the importing authority to ensure compliance with the laws, regulations, standards and requirements of the importing party concerning noise and emissions abatement.

Exporting party means the Contracting Party exporting a type design, a modification thereof, or an aeronautical product.

Exporting authority means the airworthiness authority of the exporting party.

Importing party means the Contracting Party importing a type design, a modification thereof, or an aeronautical product.

Importing authority means the airworthiness authority of the importing party.

Maintenance means actions to ensure the airworthiness of an aeronautical product not including alterations or modifications.

State regulating the airworthiness of an aircraft means the Contracting Party responsible for issuing a certificate of airworthiness for an aircraft or the Contracting Party responsible for the certification of an operator operating, under lease or charter, an aircraft which possesses a Certificate of Airworthiness issued by another state.

Type design means the description of all characteristics of an aeronautical product, including its design, manufacture, limitations and continued airworthiness instructions, which determine its airworthiness.

ARTICLE II

Scope

This arrangement applies to:

a) the acceptance by one airworthiness authority of maintenance or modifications performed under the authority of the other airworthiness authority on aircraft or on aircraft engines, propellers, appliances, materials, parts or components installed or
suitable for installation in civil aircraft;

b) co-operation and assistance with respect to maintaining the continuing airworthiness of in-service aircraft;

c) exchange of information regarding environmental standards and certification systems; and

d) co-operation in providing technical evaluations and assistance.

ARTICLE III

1.1.1.1.2 Maintenance and performance of modifications

1. If maintenance or modification is performed and certified, under the authority of one airworthiness authority in accordance with its own approval system, on an aircraft which is under the airworthiness regulation of the other airworthiness authority, or on any aeronautical product designed for installation on such aircraft, the other airworthiness authority will give the same validity to such maintenance or modification and certification as if performed or certified in its own territory, provided it has, directly or by delegation, approved such maintenance or modification.

2. The Contracting Parties may jointly determine which of them will regulate the airworthiness of an aircraft registered in the territory of one Contracting Party that is operated under lease or charter by an operator of the other Contracting Party.

ARTICLE IV

1.1.1.1.2.1 Continuing airworthiness

1. The airworthiness authorities of both Contracting Parties will co-operate in analyzing airworthiness aspects of accidents and incidents related to aeronautical products to which this arrangement applies.

2. In respect of aeronautical products designed or manufactured in its territory the exporting authority will, where appropriate, specify any action it deems necessary to correct any unsafe condition of the type design that may be discovered after an aeronautical product is placed in service, including any actions in respect of components designed or manufactured by a supplier under contract to a prime contractor.

3. In respect of an aeronautical product designed or manufactured in its own territory, the exporting authority will assist the importing authority in establishing procedures deemed necessary by the importing authority for maintaining the continuing airworthiness of such aeronautical product.

4. Each airworthiness authority will promptly inform the other of all mandatory airworthiness modifications, special inspections, special operating limitations or other actions which it deems necessary for maintaining the continuing airworthiness of relevant aeronautical products designed or manufactured in the territories of the Contracting Parties.

ARTICLE V
Mutual co-operation and assistance

1. Each airworthiness authority will apprise the other of all its relevant airworthiness and environmental laws, regulations, standards and requirements and of its airworthiness and environmental certification system.

2. Each airworthiness authority will as soon as practicable notify the other of proposed significant revisions to its standards and system for airworthiness and environmental certification or approval, offer the other airworthiness authority an opportunity to comment and give due consideration to the comments made by the other airworthiness authority on the intended revisions.

3. Amendments to maintenance certification procedures for aeronautical products covered by this arrangement will be by agreement in writing between the airworthiness authorities.

4. The airworthiness authorities will provide to each other such technical evaluation assistance as they agree is appropriate.

ARTICLE VI
Interpretation

In the case of conflicting interpretations of the airworthiness or environmental criteria, or design-related operational requirements relating to acceptance under this arrangement, the interpretation of the Contracting Party regulating the airworthiness of the aircraft or the aeronautical product installed or suitable for installation on that aircraft will prevail.

ARTICLE VII
Implementation

1. The airworthiness authorities may develop a schedule of implementation procedures for this arrangement.

2. When such a schedule has been agreed between the airworthiness authorities, this arrangement will be implemented in accordance with its provisions.

3. The airworthiness authorities will jointly review such schedule from time to time and may amend it as appropriate by written agreement.

ARTICLE VIII
Entry into force

This arrangement will enter into force upon signature by both the parties.

ARTICLE IX
Termination

Either Contracting Party may at any time give notice to the other Contracting Party, of its decision to terminate this arrangement. The arrangement will terminate twelve months following the date of receipt of the notice by the other Contracting Party, unless the said
notice of termination has been withdrawn by mutual agreement before the expiry of this period.
Appendix D

Memorandum of Understanding on the Lease of Aircraft between the Civil Aviation Authority (Name of first state) and the Civil Aviation Authority (Name of second state)

(hereinafter referred to as "the Authorities")

Note 1 - This example covers the operation, the maintenance and its performance, the performance of modifications, the MMEL/MEL, the information on faults, malfunctions, defects and other occurrences, the surveillance and the continuing airworthiness of aircraft transferred between the States.

Note 2 - The following Memorandum of Understanding is based on the existence of one of the bilateral arrangements described in Appendix B or C.

Whereas

a) the state of each authority has ratified the Protocol relating to an amendment to the Convention on International Civil Aviation (Chicago Convention) signed at Montreal on 6 October 1980 (Article 83 bis).

b) the state of each authority has signed with the state of the other authority a Bilateral Airworthiness Agreement providing for the approval or acceptance by the importing authority of approvals or findings of compliance by the exporting authority in respect of airworthiness;

c) each authority acknowledges that it is desirable, pending the coming into force of Article 83 bis, to enter into an arrangement providing for the development of procedures between the authorities that will facilitate the lease of aircraft between operators of the states of authorities, thereby enabling greater flexibility in the commercial aviation industry and avoiding redundant technical evaluations, tests and inspections by the authorities.

d) each authority has determined that the standards of airworthiness and systems for airworthiness, environmental certification and maintenance of the other authority are sufficiently equivalent to its own to make this arrangement practicable;

e) each authority has determined that the operating requirements and design-related operational requirements of the other authority are sufficiently equivalent to its own to make this arrangement practicable, and

Therefore the authorities have reached the following understanding to provide for the carrying out and acceptance of certain functions, in particular the performance of inspection and surveillance activities, required to ensure that an aircraft during the term of a lease is operated and maintained to their mutual satisfaction.

1. DEFINITIONS

Authority includes any person acting on its behalf.

Aviation document means any licence, permit, accreditation, certificate or other document issued by an authority to a person or in respect of an aircraft.

Design-related operational requirement means the operational or environmental requirements affecting either the design features of an aircraft or performance data on the design relating to the operations or maintenance of an aircraft that make that...
aircraft eligible for a particular kind of operation in a state.

*Lease* includes a transfer of an aircraft only or a transfer of an aircraft with crew, but for greater certainty does not include a charter of an aircraft or any other arrangement where there has not been a transfer of custody and control of an aircraft.

*Lease approval* means an authorization by the Lessee Authority, pursuant to Article 4, of the operation of an aircraft that is proposed to be subject to a lease.

*Lessee Authority* means the authority of the state of the lessee operator of an aircraft subject to a lease.

*Lessor Authority* means the authority of the State of Registry of an aircraft subject to a lease.

2. **SCOPE OF APPLICATION**

This memorandum will apply only to a lease of an aircraft:

a) from an operator of the state of one authority to an operator of the state of the other authority;

b) which is operated by the lessee;

c) which is registered in the state of one of the authorities; and

d) which is authorized for commercial operations.

3. **GENERAL PROVISIONS**

3.1 Each Authority will provide for the requisite authority and administrative procedures to enable and facilitate the authorization of leases of aircraft registered in the State of that Authority to operators of the State of the other Authority.

3.2 Each Authority will provide for the authority and administrative procedures to permit the carrying out and acceptance of the functions contemplated in this Memorandum.

3.3 Each Authority will endeavor to ensure the harmonization of administrative procedures and practices relating to the authorization of leases of aircraft registered in the State of that Authority to operators of the State of the other Authority and relating to the control of those aircraft during the term of the lease.

4. **LEASE AUTHORIZATION**

4.1 Where, on receipt of an application from an operator of the State of the Lessee Authority seeking authorization of a lease to it of an aircraft registered in the State of the Lessor Authority, the Lessee Authority proposes to authorize that lease, the Lessee Authority will notify the lessor Authority of its intention to issue a lease approval and of any conditions that it proposes to apply to the lease approval.

4.2 Upon notification by the lessee Authority of its intention to issue a lease approval, the Lessor Authority will notify the lessee Authority of any objection it has to the lease of the aircraft or of any condition that it desires to apply to the lease approval.
4.3 In considering the application, the Authorities will exchange such information as they consider necessary for the purpose of ensuring that there will be compliance with the applicable standards of airworthiness, operating requirements, design-related operational requirements and associated requirements.

4.4 Except as provided in Article 4.5, the Lessee Authority may issue a lease approval in respect of an aircraft, subject to any conditions it considers appropriate, where it is satisfied that the aircraft will be operated and maintained in accordance with the applicable standards of airworthiness, operating requirements, design-related operational requirements and associated requirements.

4.5 Neither Authority will issue a lease approval or otherwise authorize a lease unless there is agreement between the Authorities.

4.6 Where the Lessee Authority issues a lease approval in writing, it will, on the request of the Lessor Authority, provide a copy of the lease approval to the Lessor Authority.

4.7 Where the Lessor Authority issues an aviation document authorizing a lease, it will, on the request of the lessee Authority, provide a copy of the aviation document to the Lessee Authority.

4.8 Each Authority will require that the following documents be carried on board the aircraft during the term of the lease:

a) the lease approval, if in writing;

b) any aviation document authorizing a lease, and

c) a copy of any supplemental document setting out the authorization or acceptance between the Authorities to perform certain functions.

4.9 Each Authority may terminate at any time its authorization of a lease and will consult the other Authority prior to so acting.

5. MODIFICATION AND REPAIRS

5.1 The lessee Authority, as a condition of issuance of a lease authorization in respect of an aircraft, may require a modification to that aircraft for the purpose of compliance with its approved type design for that aircraft or with its standards of airworthiness and design-related operational requirements.

5.2 Prior to issuing a lease authorization, the Lessee Authority will ensure that the design for any modification has been approved or accepted by the Lessor Authority.

5.3 During the term of a lease authorized for an aircraft, the Lessee Authority may authorize the performance and certification, in accordance with the Bilateral Airworthiness Agreement, of modification or repairs to that aircraft.

5.4 The Lessee Authority will ensure, prior to authorizing the performance and certification of modification or repairs to an aircraft, that the design for that modification or those repairs has been approved or accepted by the lessor Authority.

5.5 The Lessor Authority will accept the performance and certification of modification or repairs to an aircraft where that performance and certification has been authorized by the lessee Authority.
6. CONTINUING AIRWORTHINESS

6.1 The lessor authority will notify the lessee authority of any mandatory airworthiness modification, special Inspection, special operating limitation or other action required by the state of the lessor authority in respect of a leased aircraft during the term of a lease.

6.2 The lessee authority will endeavor to ensure that the required action is carried out within the time limit prescribed therein and that the required action is performed and certified in accordance with the terms of the bilateral airworthiness agreement between the states of the authorities.

7. MAINTENANCE

7.1 Unless the authorities specifically agree otherwise, the lessee authority, in respect of a leased aircraft, will accept the maintenance inspection schedule approved or accepted by the lessor authority.

7.2 The lessor authority will notify the lessee authority of any change in the approved maintenance inspection schedule which may affect the lease authorization.

7.3 Where the lessee authority proposes in a particular case to grant an extension to the time requirements of the approved maintenance inspection schedule, it will seek the consent of the lessor authority to that extension.

7.4 During the term of a lease authorized for an aircraft, the lessee authority may authorize the performance and certification, in accordance with the bilateral airworthiness agreement, of maintenance of that aircraft.

7.5 The lessor authority will accept the performance and certification of maintenance of an aircraft where that performance and certification has been authorized by the lessee authority.

8. SERVICE DIFFICULTY REPORTING

8.1 During the term of a lease, the applicable requirements in respect of service difficulty reporting, or equivalent procedure, are those of the state of the lessee authority.

8.2 The lessee authority will provide in a lease authorization a condition requiring the lessee operator to provide service difficulty reports to a specified authority and that authority will ensure that a copy of the report is forwarded to the other authority as soon as practicable.

9. FLIGHT AUTHORIZATION

For the purpose of enabling the repositioning or testing of a leased aircraft in a situation where a Certificate of Airworthiness for the aircraft is not in force:

a) the lessee authority may issue a temporary authorization in respect of the aircraft, where the flight will be conducted entirely within the state of the lessee authority; and
b) the lessor authority may, on the recommendation of the lessee authority, issue a flight authorization in respect of the aircraft for any flight outside the territory of the state of the lessee authority.

10. OPERATIONS

10.1 The lessee authority will be responsible for the authorization of all operations in respect of an aircraft during the term of a lease authorized for that aircraft.

10.2 The lessee authority may approve or accept a Minimum Equipment List in respect of an aircraft.

10.3 The lessee authority will endeavor to ensure that an aircraft is operated in accordance with:
   a) the flight manual approved by the lessor authority; and
   b) the operations manual approved or accepted by it

11. SURVEILLANCE AND INSPECTION

11.1 During the term of a lease, the lessee authority will conduct such surveillance activities and inspections as it considers necessary to verify that a leased aircraft is operated and maintained in accordance with the applicable standards of airworthiness, operating requirements, design related operational requirements and associated requirements and with the terms and conditions of the lease authorization.

11.2 On the request of the lessor authority and for reasonable cause, the lessee authority will:
   a) perform an inspection of the lessee operator or the leased aircraft; or
   b) permit the lessor authority to enter the state of the lessee authority for the purpose of inspecting a lessee operator or a leased aircraft and will assist the lessor authority in the performance of the inspection.

12. ENFORCEMENT

12.1 Each authority will notify the other authority of any finding or act which affects the status of an aviation document issued by the other authority in respect of a leased aircraft or the terms and conditions of a lease authorization.

12.2 Each authority will make all reasonable efforts to secure evidence relating to any suspected contravention of requirements affecting the status of an aviation document issued by the other authority or the terms and conditions of a lease authorization.

12.3 Nothing in this memorandum will be interpreted so as to preclude the lessor authority from taking any enforcement action pursuant to the laws of its state in respect of the operation or maintenance of a leased aircraft.

13. CO-OPERATION

13.1 Each authority will ensure that the other authority is kept informed of all applicable standards of airworthiness, operating requirements. Design related operational
requirements and associated requirements of its state and will consult the other authority on any proposed changes thereto to the extent that they may affect the implementation of this memorandum.

13.2 Each authority will render such assistance as may reasonably be required by the other authority in its carrying out of inspections, investigations, prosecutions and other functions in respect of a leased aircraft.

14. PREVAILING INTERPRETATION

In the case of conflicting interpretations as to the applicable standards of airworthiness, operating requirements, design-related operational requirements or associated requirements in respect of a leased aircraft:

a) the authorities will jointly determine which State's requirements are applicable in the particular case; and

b) the interpretation of the authority of that State will prevail.

15. AMENDMENT

15.1 The authorities will meet at such times as they may decide, for the purpose of jointly reviewing the Memorandum.

15.2 Any amendment to this Memorandum will, unless otherwise specified by the authorities, take effect on the date on which the authorities sign the amendment.

16. TERMINATION

Either authority may terminate this Memorandum upon the expiration of not less than one year from the date of giving written notice to the other authority of its intention.
Appendix E

MODEL AGREEMENT BETWEEN [State 1] and [State 2]
on the implementation of Article 83 bis of the Chicago Convention

WHEREAS the Protocol relating to Article 83 bis of the Convention on International Civil Aviation (Chicago, 1944), to which [State 1] and [State 2] are parties, entered into force on 20 June 1997;

WHEREAS Article 83 bis, with a view to enhanced safety, provides for the possibility of transferring to the State of the Operator all or part of the State of Registry's functions and duties pertaining to Articles 12, 30, 31 and 32 (a) of the Convention;

WHEREAS, in line with ICAO Document 9642, Part VIII, Chapter 1, and in light of ICAO Document 8335, Chapter 10, it is necessary to establish precisely the international obligations and responsibilities of [State 1] (State of Registry) and [State 2] (State of the Operator) in accordance with the Convention;

WHEREAS, with reference to the relevant Annexes to the Convention, this agreement organizes the transfer from [State 1] to [State 2] of responsibilities normally carried out by the State of Registry, as set out in paragraphs 3 and 4 below;

The Civil Aviation Authority of Nepal, Babar Mahal, Kathmandu represented by its [title], and

The [Civil Aviation Authority] of [State 1] [address], represented by its [title],

Hereinafter referred to as "the Parties", have agreed as follows on behalf of their respective Governments on the basis of Articles 33 and 83 bis of the Convention:

GENERAL

1. [State 1] shall be relieved of responsibility in respect of the functions and duties transferred to [State 2], upon due publicity or notification of this agreement as determined in paragraph (b) of Article 83 bis.

2. The scope of this agreement shall be limited to [types of aircraft] on the register of civil aircraft of [State 1] and operated under leasing arrangement by [operator], whose the principal place of business is in [State 2]. The list of aircraft concerned, identified by type, registration number and serial number, is reproduced in the attached Schedule 1, which also indicates the term of each leasing arrangement.

* This model agreement was developed by the Secretariat on the basis of an agreement recently registered with ICAO and taking into account other related information. It should be noted that the model agreement reflects only one of the numerous possibilities for which Contracting States can opt, since Article 83 bis provides that "all or part" of the referenced function and duties of the State of Registry may be subject to such a transfer to the State of the Operator.
TRANSFERRED RESPONSIBILITIES

3. Under this agreement, the parties agree that [State 1] transfers to [State 2] the following responsibilities, including oversight and control, of relevant items contained in the respective Annexes to the Convention:

   Annex 1  *Personnel Licensing* - issuance and validation of licenses.

   Annex 2  *Rules of the Air* - enforcement of compliance with applicable rules and regulations relating to the flight and maneuver of aircraft.

   Annex 6  *Operation of Aircraft* (Part I - International Commercial Air Transport - Aeroplanes) - all responsibilities which are normally incumbent in the State of Registry. Where responsibilities in Annex 6, Part I, may conflict with responsibilities in Annex 8 - *Airworthiness of Aircraft*, allocation of specific responsibilities is defined in the attached Schedule 2.

4. Under this agreement, while [State 1] will retain full responsibility under the Chicago Convention for the regulatory oversight and control of Annex 8 - *Airworthiness of Aircraft*, the responsibility for the approval of approval of line stations used by [operator] which are located away from its main base is transferred to [State 2]. The procedures related to the continuing airworthiness of aircraft to be followed by [operator] will be contained in the operator's Maintenance Control Manual (MCM). (Schedule 2 hereunder describes the responsibilities of the parties regarding the continuing airworthiness of aircraft.)

NOTIFICATION

5. Responsibility for notifying directly any states concerned of the existence and contents of this agreement pursuant to Article 83 bis (b) rests with the State of the Operator as needed. This agreement, as well as any amendments to it, shall also be registered with ICAO by the State of Registry or the State of the Operator as required by Article 83 of the Convention, and in accordance with *the Rules for Registration with ICAO of Aeronautical Agreements and Arrangements* (ICAO Doc 6685).

6. A certified true copy [in each language] of this agreement shall be placed on board each aircraft to which this agreement applies. A certified true copy of the Air Operator Certificate (AOC) issued to [operator] by [State 2], in which the aircraft concerned will be duly listed and properly identified, will also be carried on board each aircraft.

COORDINATION

7. Meetings between [State 1 - CAA] and [State 2 - CAA] will be held at three month intervals to discuss both operations. For the sake of enhanced safety, these meetings will take place for the purpose of resolving any discrepancies found as a result of the inspections and in order to ensure that all parties are fully informed about the [operator's] operations. [State 1 - CAA] will be permitted access to [State 2-CAA] documentation concerning [operator] in order to verify that [State 2] is fulfilling its safety oversight obligations as transferred from [State1]. The following subjects will be reviewed during these meetings.
8. If, during the execution of this agreement, any aircraft subject to it is to be made the object of a sublease, [State 2] remaining the State of the Operator must inform [State 1] before any of the transferred duties and functions are carried out under the authority of a third state.

FINAL

9. This agreement will enter into force on its date of signature, and come to an end for aircraft listed in Schedule 1 at the completion of the respective leasing arrangements under which they are operated. Any modification to the agreement shall be agreed by the parties thereto in writing.

10. This agreement is accepted and signed by the [title] of [State 1] and the [title] of [State 2].

[Signature]          [Signature]

For the [Civil Aviation Authority] of [State 1]          For the [Civil Aviation Authority] of [State]
[Name, title and date]          [Name, title and date]
SCHEDULE 1 - AIRCRAFT AFFECTED BY THIS AGREEMENT

<table>
<thead>
<tr>
<th>AIRCRAFT TYPE</th>
<th>REGISTRATION NUMBER</th>
<th>SERIAL NUMBER</th>
<th>LEASING TERM</th>
</tr>
</thead>
<tbody>
<tr>
<td>[A320]</td>
<td></td>
<td></td>
<td>[date]</td>
</tr>
<tr>
<td>[B737]</td>
<td></td>
<td></td>
<td>[date]</td>
</tr>
<tr>
<td>[E120]</td>
<td></td>
<td></td>
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<tr>
<td>[IL62]</td>
<td></td>
<td></td>
<td>[date]</td>
</tr>
</tbody>
</table>

SCHEDULE 2 - RESPONSIBILITIES OF [State 1] AND [State 2] REGARDING AIRWORTHINESS

<table>
<thead>
<tr>
<th>ICAO Doc.</th>
<th>Subject</th>
<th>Responsibilities of the State of Registry ([State 1])</th>
<th>Responsibilities of the State of the Operator ([State 2])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annex 8, Part II, Doc 9642, Part VI, Ch.1</td>
<td>Mandatory continuing airworthiness information</td>
<td>Ensure that [State 2-CAA] and [operator] receive all applicable mandatory continuing airworthiness information</td>
<td>Ensure that [operator] complies with mandatory continuing airworthiness information transmitted by [State 1 - CAA]</td>
</tr>
<tr>
<td>Annex 6, Part I</td>
<td>Operation of aircraft in compliance with its Certificate of Airworthiness</td>
<td>Assume State of Registry's responsibility as defined in Para. 5.2.4 of Annex 6, Part I</td>
<td></td>
</tr>
<tr>
<td>Annex 6, Part I</td>
<td>Operator's Maintenance Responsibilities</td>
<td>Approve maintenance organizations used by [operator] except for line stations away from operator's main base</td>
<td>Approve line stations away from [operator]'s main base</td>
</tr>
<tr>
<td>Annex 6, Part I,</td>
<td>Operator's Maintenance Control Manual (MCM)</td>
<td>Ensure the guidance is contained in the MCM, approve the MCM, and transmit copy to [State 1-CAA]</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Annex 6, Part I,</td>
<td>Maintenance Records</td>
<td>Inspect maintenance records and documents every six months</td>
<td>Ensure that records are kept in accordance with Para 8.4.1 to 8.4.3 and inspect in accordance with the requirements of the Air Operator Certificate (AOC)</td>
</tr>
<tr>
<td>Annex 6, Part I</td>
<td>Continuing Airworthiness Information</td>
<td>Ensure that airworthiness requirements of [State 1] are known to both [State 2-CAA] and [operator]</td>
<td>Ensure the requirements are contained in the MCM and approve the MCM</td>
</tr>
<tr>
<td>Annex 6, Part I,</td>
<td>Approved Maintenance Organization</td>
<td>Approval of [operator's] base maintenance organization and procedures for Para 8.7.1 to 8.7.7.2 and communication to [State 2-CAA] of related procedures to be included in the MCM</td>
<td>-Approval of [operator's] line maintenance arrangements away from base -Ensure the procedures are contained in the MCM and approve the MCM</td>
</tr>
</tbody>
</table>
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Chapter 12
Inspect Operator's Main Base Facility

12.1. BACKGROUND AND OBJECTIVES
This chapter describes the general process of inspecting an operator's maintenance/contract maintenance facility for regulatory compliance. *(Note: specific detailed procedures in conducting audits are contained in this manual in the title ‘Airworthiness auditing’.*

12.2. GENERAL
The maintenance inspection is performed to ensure that adequate housing, equipment, spare parts, technical data and qualified personnel are being utilized to satisfactorily complete all maintenance functions.

12.3. PERFORMING THE INSPECTION

A. **Equipment Identification**: Inspectors should be aware of the type of aircraft being operated. The operations specifications or attached listing will identify the type of aircraft authorized for use.

B. **Previous Inspection Reports**: Previous inspection reports, correspondence, and other documents in the local office files should be reviewed to determine if there are any open items or if any areas are identified that require special attention.

C. **Facilities**: The maintenance facility is required to perform maintenance in accordance with the operator's maintenance manuals. The inspector should use these documents to determine what special equipment, housing, and environmental conditions are necessary to perform the work. For example, the manufacturer may require special stands, hand tools, or a dust-free environment to repair a specific item.

D. **Contract Maintenance Arrangements**: If any maintenance is being performed by a contract facility, an inspection must be performed at the contractor's facility. During the inspection the inspector must determine if the contractor has adequate facilities and personnel to perform the contracted work. The inspector must keep in mind that the contract maintenance facility is an extension of the operator's overall maintenance organization. Maintenance performed by the contractor must be in accordance with the operator's approved maintenance program.

1. For inspections of a contract maintenance facility located out of the geographic boundaries of the local authority office assistance should be requested from the authority office in which the facility is located. A list of contractor management personnel to be contacted can be obtained from the operator.

2. The operator's manuals must be reviewed to determine the levels of maintenance performed at the contract maintenance facility.
(3) The contract maintenance facilities should be inspected to ensure that they are properly certificated and rated for the scope of work performed, e.g., aircraft, powerplant, propeller, components, and accessories.

E. Enforcement History: Inspectors should check the information system to determine if there are any areas that require special attention. If a contract maintenance organization is used, it should also be checked.

12.4 PROCEDURES

A. Review the Operator's data. Review the following:

(1) The district office files to determine if any chronic or open items exist, status of any enforcement action reports, exemptions, etc.

(2) The operator's maintenance manuals to determine the level of maintenance accomplished and the complexity of operation at the maintenance facility

(3) The operator's operations specifications to determine the maintenance and inspection program content and complexity

B. Inspect the Operator's Technical Library. Ensure all required technical data is available and current. If data is on microfiche, ensure that readers are available and serviceable. The data must include the following, as applicable:

* Operations specifications
* Operator's general maintenance manual
* Aircraft manufacturer’s manuals
* Propeller, appliance, engine, and emergency equipment manufacturer's manuals
* Manufacturer's and vendor's service bulletins/letters
* Applicable Aviation Regulations
* Applicable Airworthiness Directives
* Applicable Type Data Sheets/Supplemental Type Certificates
* Approved Flight Manual

NOTE: Sample a representative number of aircraft records to ensure the integrity of the system.

C. Inspect the Maintenance Organization. Ensure the following:

(1) Staffing meets maintenance needs based on the complexity of operation

(2) Responsibilities are separated between inspection and maintenance sections

(3) Maintenance and inspection management personnel are qualified

D. Inspect the Operator's Maintenance Facilities. Using the operator's manual as a reference, inspect the following:

(1) Parts and storage areas, to ensure:
(a) Adequate spare parts are available to support complexity of operation
(b) Receiving inspections are accomplished in accordance with operator's manual
(c) Shelf life-limits are established for items, and that these items are controlled in accordance with operator's manual or manufacturer's recommendations
(d) Components and hardware are properly identified, protected, and classified as to serviceability
(e) Segregation of serviceable and unserviceable components and hardware is maintained
(f) Hazardous materials are suitably segregated and stored

(2) Special tools and test equipment, to ensure:
   (a) Serviceability and calibration are accomplished in accordance with operator's manual
   (b) All required items are serviceable and within calibration criteria, to include traceability to one of the following:
       * National Standards
       * Standard established by the item's manufacturer
       * If foreign manufactured, the standards of the country where manufactured, if approved by the Director
   (c) Appropriate types and quantities are available
   (d) Proper storage and protection is utilized

(3) Fuel/oil storage and dispensing facilities, if operated and maintained by operator.

(4) Deicing chemical storage and dispensing equipment, if applicable. The following must be inspected to ensure compliance with the operator's manual:
   (a) Chemical storage and dispensing
   (b) Serviceability of equipment
   (c) General condition and safety of storage areas
   (d) Training of personnel in operator's deicing procedures

**NOTE:** If deicing services are provided on a contract basis, ensure that the contractor meets the above requirements.

(5) Support shops (avionics, sheet metal, engine etc.), to ensure:
   (a) All required technical data is current and available. If data is on microfiche, ensure that readers are available and serviceable.
   (b) Staffing reflects complexity of shop
   (c) Personnel are properly trained, qualified, and authorized
   (d) Procedures for shift turnover are in place and properly utilized
(e) All required special tooling and equipment is available, serviceable, and within calibration criteria

(f) Maintenance tasks and inspection functions are being accomplished in accordance with operator's maintenance manual

(g) Safety equipment is available and serviceable

(h) Individual shop storage areas are maintained to same standards as main storage area

(i) Work areas do not conflict with each other, e.g., lathe next to avionics repair area

(j) Lighting, ventilation, and general housekeeping are adequate

(6) Hangar facilities, to ensure:

(a) Facilities are adequate for work being performed

(b) Staffing reflects the complexity of work being performed

(c) Personnel are properly trained, qualified, and authorized

(d) Procedures for shift turnover are in place and properly utilized

(e) Special equipment and tooling is available, serviceable, and calibrated, if applicable

(f) Safety procedures are established and adhered to

(g) Procedures direct the flow and control of all maintenance and inspection records

(h) Lighting, ventilation and general housekeeping are adequate

(7) Hangar ground support equipment, to ensure the equipment is serviceable and appropriate for the work being performed

F. Inspect the Engineering Department, if applicable. Ensure the following:

(1) Staffing is adequate for complexity of assigned duties

(2) Personnel are qualified

(3) All required technical data is current and available

(4) Engineering orders are accomplished and in accordance with operator's manual

(5) Major repair and modifications are accomplished in accordance with (insert authority name) approved data

(6) Major repair reports are retained and available

NOTE: Review a representative sample of operator generated Engineering Orders to ensure that the program is being followed and items are being properly categorized (major versus minor).

G. Inspect the Inspection Department. Ensure the following:

(1) Designated staffing is adequate for complexity of operation

(2) Delegated staffing is at reasonable level
H. Inspect the Maintenance Control Center, if applicable

(1) Ensure the following:

(a) Staffing is adequate for the complexity of the operation and that personnel are trained and qualified

(b) Technical data is available and current

(c) Communications system provides effective communication between all departments and stations

(2) Review the activity/turnover log to look for trends and to evaluate the general effectiveness of the overall maintenance program

I. Inspect the Maintenance Production/Planning Control, if applicable. Ensure the following:

(1) Staffing is adequate for the complexity of the operation

(2) Planning system is effective, e.g., inspection/overhaul scheduling, facility scheduling, parts forecast, personnel requirements, and communication with other departments

(3) The system provides for scheduling corrections of deferred and carryover maintenance items

**NOTE:** Randomly sample a representative number of open and completed work packages to ensure the effectiveness of the system.

J. Inspect aircraft. Inspect any available aircraft to determine the quality of maintenance being performed.

K. Analyze findings. Upon completion of inspection, record all deficiencies noted and take appropriate action.
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Chapter 13

Conduct Spot Inspection of Operator's Aircraft Undergoing Maintenance

13.1. BACKGROUND AND OBJECTIVES

This chapter provides guidance for observing and analyzing in-progress maintenance operations for compliance with specific methods, techniques, and practices in the operator's inspection and maintenance program.

13.2. GENERAL

A. Definition: Work package - Job task control units developed by the operator for performing maintenance/inspections. A typical work package may include the following:
   * Component change sheets
   * Inspection work cards
   * Non-routine work cards
   * Appropriate sections of the maintenance procedures manual
   * Engineering Orders (EOs)

B. Inspection Personnel. It is important that Airworthiness Inspectors are familiar with the type of aircraft to be inspected before performing the inspection. This can be accomplished through on the job training.

C. Coordination

(1) Airworthiness Inspectors possess various degrees and types of expertise and experience. An AWI who needs additional information or guidance should coordinate with personnel experienced in that particular speciality.

(2) Regional offices need to establish close coordination with Central Office. Coordination is required to:
   * Gain access to operator file for information not available to the regional office
   * Transmit all inspection results and/or recommendations to Central Office

13.3 INITIATION AND PLANNING

A. Initiation: Spot inspections can be scheduled as part of the work program, but may be initiated whenever a problem is noted, including deficiencies noted during other types of inspections.

B. Planning

(1) Spot inspections derived from the planned work program

   (a) The number of spot inspections in the work program depends on the type and number of operator aircraft. After determining the type of aircraft to be inspected, confirm the aircraft availability and scheduled maintenance functions with operator personnel.
(b) If the maintenance to be observed is known, review the operator's maintenance procedures manual to become more familiar with the maintenance task. Review the following:

* Duplicate Inspection Items, if applicable
* Forms used to document maintenance task
* Latest manual revision and date
* Special tools and equipment used to perform the maintenance task
* Any other manual requirements relating to the maintenance task

(c) For regional offices in which the maintenance procedures manuals are not in the office, review the applicable sections of the operator's maintenance manual at the facility prior to performing this task.

(d) Examining previous inspection findings provides the AWI with background information regarding problem areas found during other spot inspections. This information can give an indication of how effective past corrective actions were in resolving previously identified problem areas.

(e) The NAA provides information such as Airworthiness Directives (ADs), Service Difficulty Report Summaries, Maintenance Bulletins. This information should be reviewed, when available, so as to become familiar with current service difficulty information. While performing the spot inspection, ensure that these conditions do not exist on the aircraft.

(2) Spot inspections not derived from the planned work program. There are many situations while performing other surveillance activities that afford the opportunity to perform spot inspections. For example, if a discrepancy is found during a ramp inspection that requires maintenance, a spot inspection of that maintenance function could be performed.

13.4. MAINTENANCE RECORDS

During performance of the spot inspection, special attention should be paid to the following areas, as applicable:

* AD's current status, including the method of compliance
* Overhaul records, including documentation containing the overhaul details and replacement time
* Major repair/alteration classifications and the use of approved data
* Replacement time of life-limited parts

13.5 PERFORMING THE SPOT INSPECTION

A. Selecting a Maintenance Task

(1) Discuss with the maintenance supervisor what maintenance is currently being performed to determine what portions of that current maintenance/inspection should be observed.
Special emphasis should be placed on observing maintenance tasks that involve duplicate inspections. Problem areas to look at include:

* Persons performing inspections outside of authorizations or limitations
* Duplicate inspection items not being properly identified or accomplished

B. Performance Standards

(1) Each operator has a maintenance/inspection program for its individual maintenance operations. For maintenance to be performed on the operator's aircraft, there must be corresponding provisions and procedures in the operator's maintenance manual.

(2) Each operator should have special procedures in the manual that ensures persons outside of the organization perform maintenance in accordance with the operator's maintenance manual.

C. Discrepancies Noted during Surveillance: When deviations from accepted procedures are noted, it must be brought to the attention of maintenance management that corrective action must be taken immediately. Discrepancies noted during the inspection may require follow up at a later time.

13.6. STRUCTURAL SPOT INSPECTIONS

A. Structural spot inspections of transport category aircraft undergoing "C," "D," or similar "heavy inspections" must be carried out on a regular basis. This increased surveillance is due to the "ageing" fleets of many operators and reflects concern over structural fatigue and corrosion.

B. During the observance of a "heavy inspection," AWI's must pick an inspection area where maintenance has been started and where there could be possible fatigue or corrosion problems (especially an area that is not usually open to inspection, such as under the galley or lavatories).

(1) If inspecting an area where maintenance is in progress, the following should be evaluated:

(a) While performing their job functions, are personnel accomplishing their job task per the work package?

(b) Does the ageing aircraft/corrosion control program provide the necessary guidance to evaluate and respond in a timely manner to structural fatigue and corrosion?

(2) If inspecting an area where maintenance has already been accomplished, the following should be evaluated:

(a) Are there any structural fatigue or corrosion problems evident?

(b) If there are, were they identified by the person(s) responsible for that area?

(c) If they were identified, was corrective action initiated and completed?

(3) Is there an AD applicable to this problem? If there is an AD, what is the status of that AD?

NOTE: While inspecting these areas that are not normally accessible, look for evidence of structural major...
replacements. If a major repair was accomplished, review the approved data for that repair.

13.7. PROCEDURES

A. Initiate Spot Inspection, as applicable

B. Select appropriate aircraft for inspection. Determine the following from the operator's maintenance schedules:
   * Aircraft availability
   * Aircraft type
   * Type of maintenance being performed

C. Prepare for the inspection. Review the following:
   1. Maintenance manual procedures for maintenance being performed (if available)
   2. Operations specifications time limitations, when applicable to the maintenance task
   3. Previous inspection findings
   4. Applicable maintenance alert bulletins
   5. Service Difficulty Report Summary
   6. Any new regulation and/or AD requirements affecting the aircraft to be inspected

D. Perform the Spot Inspection
   1. Identify yourself to the maintenance supervisor and discuss the nature of your inspection.
   2. Discuss with the maintenance supervisor/person in charge the status of the selected maintenance task.
   3. Select a particular maintenance task within the work package. If possible, include a maintenance task that requires a duplicate inspection.
      (a) Ensure that current maintenance procedures are available to the person(s) performing the work by accomplishing the following:
         * Asking maintenance personnel for the maintenance procedures used to accomplish the work
         * Recording the date of the maintenance procedures being used to perform the maintenance task for future comparison with the maintenance manual master copy
      (b) Ensure that the maintenance is performed according to established procedures by comparing actual performance to the operator's approved maintenance/inspection manual procedures.
      (c) Ensure that proper tools are being used by accomplishing the following:
         * Observing that special tools referenced in the maintenance manual are being used
* Checking calibration due dates on precision tools, measuring devices, and
testing equipment requiring calibration

(d) Ensure that the operator has the facilities to properly perform the maintenance
task.

(e) Ensure that systems being maintained are not exposed to environmental
conditions that could contaminate or damage components.

(f) Ensure that maintenance recording is accomplished according to the operator's
recordkeeping system.

(g) Note any maintenance task deficiencies and include any copies of the documents
that revealed the deficiencies.

(h) For those maintenance tasks involving duplicate inspection, determine that the
persons observed performing these functions are appropriately certificated,
authorized, and qualified.

E. Analyze the findings: Evaluate inspection findings to determine if discrepancies exist.
Discuss the results with the operator.

7. TASK OUTCOMES

Completion of this task can result in requesting manual revisions and the issuing of
audit findings.

Document Task- File all supporting paperwork in the operator's office file.
Chapter 14
Aircraft Ramp Inspection

14.1. OBJECTIVE
This chapter provides general guidance for sampling the quality of maintenance and the degree of compliance with the operator's maintenance procedures on in-service airline aircraft.

14.2 GENERAL
A. CAA Inspection Personnel
   (1) It is important that Airworthiness Inspectors (AWIs) become familiar with the type of aircraft to be inspected before performing the inspection. This can be accomplished by on the job training.
   (2) Due to the hub and spoke concept, many aircraft have less than one hour ground time. To ensure that the inspection is performed adequately, it is recommended that two inspectors perform this task in exterior and interior phases.

B. Coordination
   (1) Airworthiness and Operations Inspectors possess various degrees and types of expertise and experience. An AWI who needs additional information or guidance should coordinate with personnel experienced in that particular specialty.
   (2) Regional units may need to coordinate with Central Office (CO) as they do not always have access to the operator's maintenance procedures manual. In addition, when discrepancies are found, the Regional unit should communicate with CO.

C. Use of an Identification Card. Conflicts are occurring between AWIs performing ramp inspections and airport security personnel allowing access to aircraft and other secure areas. Proper use of airport identification badges should relieve some of these problems.

14.3 INITIATION AND PLANNING
A. Initiation: This task is scheduled as part of the work program. Additional inspections are initiated by national, regional, or district office special requirements.

B. Planning: The ramp inspection provides the AWI with a good opportunity to ensure that the compliance dates and requirements of new Airworthiness Directives (ADs) and regulatory revisions have been met. ADs, Service Difficulty Report Summaries, Maintenance/Airworthiness Bulletins, and previous reports should be reviewed, when available, so as to become familiar with current service difficulty information.

14.4 MAINTENANCE RECORDS
A. Regulations require that maintenance be recorded whenever it is performed prior to an approval for return to service. The operator's maintenance procedures manual should describe the procedures for ensuring that these recording requirements are met, including the specific instructions on when an airworthiness release or
appropriate maintenance log entry is required.

B. All mechanical discrepancies entered in the maintenance log must be either corrected or deferred using the methods identified in the operator's maintenance procedures manual.

C. The Minimum Equipment List has certain procedures and conditions that must be met prior to deferring the item(s).

(1) These procedures are identified by "O", "M", and "O/M" and are normally contained in the operator's approved Minimum Equipment List. There are occasions in which the list references these procedures to another document.

(2) When reviewing the records for Minimum Equipment List compliance, the AWI must determine what procedures are required for deferral and ensure that these procedures are accomplished. Any MEL time limits must be adhered to or evidence of concessions must be produced.

(3) The AWI must ensure that all applicable repetitive Minimum Equipment List procedures are accomplished for those items that are deferred and are continuing to be deferred through the station. These repetitive maintenance procedures must be signed off in the maintenance log as evidence that the procedures were accomplished.

14.5 DEFERRED MAINTENANCE

A. Minimum Equipment List/Deferred Maintenance: The operator's approved Minimum Equipment List allows the operator to continue a flight or series of flights with certain inoperative equipment. The continued operation must meet the requirements of the Minimum Equipment List deferral classification and the requirements for the equipment loss.

B. Other Deferred Maintenance

(1) Operators frequently use a system to monitor items that have been inspected previously and found to be within serviceable limits. These items are still airworthy, yet warrant repair at a later time or when items no longer meet serviceable limits. This method of deferral may require repetitive inspections to ensure continuing airworthiness of the items. Examples of items that are commonly deferred in this manner are fuel leak classifications, dent limitations, and temporary (airworthy) repairs.

(2) Passenger convenience item (not safety/airworthiness related) deferrals should be handled in accordance with the operator's program.

C. The maintenance program approved for an operator must provide for prompt and orderly repairs of inoperative items.

14.6. CABIN INSPECTION

A. This inspection should be performed, when possible, without disturbing the loading and unloading of passengers. The inspection can still be performed when some passengers are on board during through flights, but good judgment must be exercised by inspecting areas away from the passengers.
B. Any discrepancy should be brought to the attention of the flight crew or appropriate maintenance personnel immediately.

14.7 CARGO/COMBINATION CONFIGURED AIRCRAFT

A. Inspection results have disclosed instances of significant aircraft structural damage resulting from careless loading of cargo, such as:

* Torn or punctured liners, indicating hidden damage to circumferential stringers, fuselage skin, bulkheads and decreasing fire extinguishing effectiveness.
* Damaged rollers, ball mats, etc., causing significant structural damage to the floors.
* Corrosion and structural damage caused by improper handling of some hazardous materials.

B. The surveillance of hazardous material handling is not the primary function of the AW inspector. The AWI should contact the appropriate Operations Inspector if discrepancies are noted in the handling of hazardous materials.

14.8 PERFORMING THE RAMP INSPECTION

A. This inspection must be accomplished without interfering with the turnaround of the aircraft. The following lists of item are just some of the activities that could cause a delay in the turnaround time if interfered with.

* Boarding and deplaning of passengers
* Servicing
* Fueling
* Maintenance
* Baggage handling
* Any other operator activity

B. Any discrepancies noted must be brought to the attention of appropriate personnel immediately, to allow the operator the opportunity to take corrective action without interrupting the flight schedule. The AWI must verify that all corrective actions taken were in accordance with the requirements of the operator's maintenance procedures manual.

14.9 PROCEDURES

A. Initiate Ramp Inspection in accordance with the Office Work Program

B. Prepare for the Inspection

(1) Review the operator's schedule, select the flight to be inspected, and determine the type of equipment and ground time.

(2) Determine if any recent problem areas have been identified for that type of aircraft.

(3) Determine if recent regulatory changes and AD requirements affect the aircraft to be inspected.
C. Conduct Exterior Inspection, as applicable. Perform this inspection in accordance with the Exterior Inspection Guidelines found in Appendix 2 of this document.

D. Interview Flight Crew: Introduce yourself to the flight crew and describe the purpose and scope of the inspection.

E. Inspect Aircraft Maintenance Records
   (1) Ensure that all open discrepancies from the previous flight are resolved per the operator's manual, prior to departure of the aircraft.
   (2) Review the maintenance records to determine if repetitive maintenance problems exist that might indicate a trend.
   (3) Ensure that all Minimum Equipment List items are deferred in accordance with the provisions of the operator's approved Minimum Equipment List.
      (a) Review the operator's approved Minimum Equipment List to determine that conditions, procedures, and placarding requirements were accomplished to correctly defer specific items.
      (b) Note the date when an item was first deferred to determine if the maximum allowed length of deferral was exceeded. Accomplish this by examining maintenance record pages, the deferred maintenance list, or deferred maintenance placards or stickers.
   (4) Ensure that an airworthiness release, maintenance record entry, or appropriate approval for return to service has been made after the completion of maintenance.
   (5) Ensure that the maintenance record contains the following for each discrepancy:
      * Description of the work performed or a reference to acceptable data
      * Name or other positive identification of the person approving the work
      * Name of the person performing work, if outside the organization

F. Perform Interior Inspection, as applicable. Perform this inspection in accordance with the Interior Inspection Guidelines found in Appendix 1 of this document.

G. Debrief Operator. Inform the flight crew or appropriate personnel that the inspection has been completed. Discuss the discrepancies brought to the operator's attention during the inspection.

H. Examine Maintenance Record Entries. Ensure that the operator has recorded all discrepancies noted during this inspection. If time is available, monitor the operator's corrective actions.

I. Analyze Findings. Analyze each finding to determine if the discrepancies are the result of improper maintenance and/or missing or inadequate maintenance/inspection procedures.

14.10 TASK OUTCOMES

A. File Report Form

B. Completion of this task can result in the following:
(1) Appropriate enforcement action when analysis of the findings discloses improper maintenance.

(2) Written notification to the operator of the necessary changes to the manual, when analysis of the findings discloses missing or inadequate maintenance/inspection procedures.

(3) Communication with central office by the regional office of the finding discrepancies.


14.11 FUTURE ACTIVITIES
Based on inspection findings, determine if closer surveillance, additional enforcement, other job tasks, and/or additional coordination between CO and ROs are required to regain compliance.

14.12 ENFORCEMENT ACTION
If deficiencies are identified during the conduct of ramp inspections and indicate serious safety concern, take appropriate action when necessary as per Aviation Enforcement Procedure Manual to preserve safety.

Following procedure needs to be followed:

(1) Initiate an internal office memo regarding the serious safety concern along with necessary evidence to superior officer along with recommendation of appropriate enforcement action to be taken as per Aviation Enforcement Procedure Manual.

(2) After approval of the recommendation of appropriate enforcement action from Director General forward the operator with a formal letter regarding the enforcement action that has been taken for the serious safety concern observed during the conduct of ramp inspection.
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Appendix 1

21.3.4 INTERIOR INSPECTION GUIDELINES

A. Examine the airworthiness and registration certificates. Ensure the following:
   - Airworthiness and registration certificates are current and valid
   - Both certificates contain the same model, serial, and registration numbers
   - Temporary registration is current
   - Signatures are in permanent-type ink

B. Flight Deck Inspection. Inspect the following:
   (1) Instrument security and range markings
   (2) Windows (delamination, scratches, crazing, and general visibility)
   (3) Emergency equipment
   (4) Seal on medical kit (if located on flight deck)
   (5) Seat belts and shoulder harnesses (Technical Standard Order marking, metal to metal latching, and general condition)
   (6) Check the following if using cockpit jump seat:
      - Jump seat oxygen system - turn regulator on and select 100% oxygen
      - Interphone system - select Comm 1 and Comm 2 to ensure systems are working
   (7) When the most forward jump seat is in the cabin, coordinate with the crew for connecting the headset and adapter cables.
   (8) Ensure that the jump seat is serviceable and that seat belt and shoulder harnesses are available

C. Cabin Inspection. Inspect the cabin to include the following:
   (1) Lavatory. Ensure the following:
      - Fire extinguisher system is installed in sealed trash containers
      - Smoke detection system is installed
      - Trash containers are sealed according to applicable Airworthiness Directive(s)
      - "No Smoking" placards are posted
      - Ashtrays are available outside the lavatory
   (2) Flight attendant seats.
      - Pull the jump seat down to ensure seat retracts (those in the path of exits)
      - Inspect seat belts for Technical Standard Order marking, metal to metal latching and general condition
Cabin emergency equipment. All equipment requiring periodic inspections should have an inspection date marked on it. Inspect the following:

- Flight attendant flashlight holder
- Slide containers, to ensure containers are properly marked for content. Check pressure of slide inflation bottle if visible.
- Medical kit (if not checked on flight deck)
- First aid kit
- Emergency oxygen (proper pressure and security)
- Megaphone(s) (security and general condition)
- Fire extinguishers (security, pressure, seal)
- Life raft storage markings (if raft is required)
- Emergency briefing cards (random sample)
- General condition of emergency floor path lighting system
- Placement of all "Emergency Exit" signs
- Presence and legibility of "Emergency Exit" operation instructions
- Placarding for location of all emergency equipment
- Life preservers (vests)

Passenger seats. Ensure the following:

- Seats adjacent to emergency exits do not block exit path
- Seats are secure in seat rack (random sample)
- Seat breakover pressure is in accordance with operator's maintenance program (random sample)
- "Fasten Seat Belt During Flight" placards are in view from all seats
- Seat belts have metal to metal latches and are in good general condition (random sample)

Galleys/service centers. Inspect the following:

- Trash bin lids for fit
- Storage compartment restraints
- Stationary cart tie-downs
- Lower lobe equipment/restraints
- Lift operation
- Galley supply stowage

Overhead baggage compartments. Check for weight restriction placards and the
D. Inspect cargo compartment

(1) Ensure the following:
   - Cargo compartment fire protection is appropriate for its classification
   - Cargo liner is free from tears and/or punctures. If these are noted, inspect structure behind liner for damage, e.g., stringers, circumferential, etc. Ensure sealing tape is proper type and in good condition.
   - Cargo door is free of fluid leaks and structural damage
   - Fuselage door structure and sill are free of damage
   - Smoke detectors are in satisfactory condition
   - Lighting is operable and protective grills are installed
   - Cargo flooring is free from structural or other damage
   - Pallet positions/compartments are placarded for position identification and weight limitations

(2) Inspect pallet system, if applicable. Ensure the following:
   - Ball mats are serviceable, e.g., no broken or missing balls
   - Forward, aft, and side restraints are serviceable
   - Roller assemblies are secure and have no missing or broken rollers

(3) Ensure the 9g forward restraint net is serviceable, if applicable.

(4) Ensure that cargo restraints for bulk loaded cargo are adequate, if applicable.

(5) Inspect cabin mounted equipment.

(6) Inspect fire extinguishers for inspection due dates and pressure.

(7) Inspect load manifest for hazardous material. If present, determine crew knowledge of the following:
   - Location and labeling of hazardous materials
   - Special requirements, if required
   - If proper paperwork is on board

(8) Ensure captain is aware of the following responsibilities:
   - Inspection of cargo to ensure proper load distribution
   - Ensuring loads do not exceed compartment or position limits
   - Ensuring loads are being properly restrained.
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Appendix 2

21.3.4 EXTERIOR INSPECTION GUIDELINES

A. Accompany a flight crew member during the exterior inspection, if possible, and inspect the following, as applicable:

(1) Landing gear and wheel well areas. Check for the following:
* Any indication of wear, chafing lines, chafing wires, cracks, dents, or other damage
* Structural integrity of gear and doors (cracks, dents, or other damage)
* Hydraulic leaks (gear struts, actuators, steering valves, etc.)
* Tire condition
* Tire pressure (if pressure indicators are installed)
* Wheel installation and safety locking devices
* Wear, line security, leaks, and installation of brakes
* Corrosion

(2) Fuselage and pylons. Inspect the following:
* Structure for cracks, corrosion, dents, or other damage
* Fasteners (loose, improper, missing)
* Condition of radome
* Condition of pitot tubes
* Static ports (cleanliness and obstructions)
* Stall warning devices and other sensors
* Antennas (security and indications of corrosion)
* Lavatory servicing areas (evidence of fresh blue water streaks)
* Cargo compartments for integrity of fire protective liners (no holes or unapproved tape used for repairs)
* Emergency exit identification/markings
* Registration marking (legibility)
* All lights (general condition, broken lenses, etc.)

(3) Wings and pylons. Inspect the following:
* Structure for cracks, corrosion, dents, or other damage
* Leading edge (dents and/or damage in line with engine inlets)
* Leading edge devices (when open, actuator leaks, general condition of lines, wires, and plumbing)
* All lights (general condition, broken lenses, etc.)
* Flaps (cracks, corrosion, dents, and delamination)
* Flap wells (general condition of lines, wires, and plumbing)
* Static eliminators (number missing)
* Ailerons and aileron tabs (cracks, corrosion, dents, delamination)
* Missing, loose, or improperly secured access door/inspection panels and blowout panels

(4) Engines. Inspect the following:
* Intake for fan blade damage, and oil leaks
* Ring cowl for missing or loose fasteners
* Cowling doors for security and proper fit
* Lower cowling for evidence of fluid leaks
* Exhaust for turbine and tailpipe damage, and evidence of fluids
* Reverser doors for stowage and security, and evidence of leaks
* Access doors for security

(5) Propellers. Inspect the following:
* Leading edge of propeller for cracks, dents, and other damage
* Deicer boots for signs of deterioration and security
* Spinners for security, cracks, and evidence of fluid leaks

(6) Empennage. Inspect the following:
* Leading edge for dents
* All lights (general condition, broken lenses, etc.)
* Missing static discharge eliminators
* Elevator, rudder, and tabs (cracks, corrosion, dents, and delamination)
* Elevator and rudder power unit for evidence of hydraulic leaks

(7) Ground safety. Inspect the following:
(a) Positioning of support vehicles
(b) Fueling of aircraft, to include the following:
* Refueling pressure
* Condition of refueling unit (leaks, filter change dates, exhaust system, etc.)
* Grounding
* Fire protection
* General fueling procedures
(c) General condition of ramp, to include the following:
* Provisions for grounding
* Foreign objects on ramp
* Fuel spills
* General housekeeping/cleanliness
* Passenger control
* Fire protection

(8) Baggage. Observe loading and unloading of baggage compartments to include the following:
* Baggage restraining system
* Load distribution
15.1. OBJECTIVE

This chapter provides guidance for conducting a cabin enroute inspection to ensure that an operator's cabin safety procedures adhere to the CAA regulations and safe operating practices.

15.2. GENERAL

Cabin enroute inspections are normally carried out by Operations Inspectors. Nevertheless Airworthiness Inspectors when travelling on duty should make observations during the flight and provide the Director with information concerning, operator procedures, and the condition and maintenance of aircraft emergency equipment and furnishings.

A. Inspector Qualifications

(1) Since Airworthiness Inspectors, may not receive system training on all aircraft, it is important that the inspector become familiar with the operator's procedures and equipment before performing the inspection.

(2) The CAA should not encourage two inspectors to perform a cabin enroute inspection on the same flight. Therefore each inspector must be familiar with the cabin enroute inspection procedures before performing this task and must be authorized through their airworthiness supervisor and the flying operations section of the CAA. However if operations approval has not been requested or given the AWI can still make observations (as a passenger from his seat) during the course of the flight.

(3) Inspectors possess various degrees and types of expertise and experience. When additional information or guidance is needed, the inspector should coordinate with personnel experienced in that particular specialty.

B. Inspector Conduct: In performing this job task, the actions of the inspector are subject to the close scrutiny of airline employees and the general flying public. The inspector must be alert for leading questions from crewmembers and passengers regarding destinations, technical information, and other operators.

NOTE: Inspectors must comply with all regulatory requirements.

C. CABIN ENROUTE INSPECTION AREAS

Three general areas have been identified for inspectors/specialists to observe and evaluate during cabin enroute inspections. Each area should be considered to be of equal importance. The three inspection areas are as follows:

(1) Cabin (Interior): The "interior" inspection area applies to the general airworthiness of the aircraft cabin, and the condition and availability of aircraft cabin emergency equipment and furnishings.

(2) Crewmember: The "crewmember" inspection area applies to flight attendants who perform their assigned duties during the flight. Inspectors should evaluate such items as crewmember knowledge, ability, and proficiency by directly observing flight
attendants performing their assigned duties and functions. (This area is not normally formally inspected by an AWI.)

**NOTE:** Flight attendants that are receiving operating experience, "trainees", should not be evaluated on the same basis as the fully qualified crewmembers.

(3) Flight Conduct: The "flight conduct" inspection area relates to the specific phases of the flight which can be observed during the cabin enroute inspection. This includes a wide range of items that can be observed and evaluated by inspectors, such as flight crew member performance of duties, interface with ground crews, and monitoring carry-on baggage. These types of areas can often be observed before beginning a flight, at enroute stops, or at the termination of a flight.

D. INITIATION AND PLANNING

(1) Initiation: This task is normally performed by Operations Inspectors but can be scheduled on an opportunity basis as part of an Airworthiness route station inspection.

(2) Planning

   a) Inspectors conducting cabin enroute inspections should make arrangements for the inspection as far in advance of the flight as possible. Inspectors are expected to exercise sound judgment in these matters.

   **NOTE:** Inspectors will not occupy the flight attendant jump seats. Only qualified crewmembers, as determined by the operator, are authorized to occupy this seat.

   b) When it is necessary to board a flight at an intermediate stop, the inspector will make every effort to advise the pilot in command, prior to boarding the flight, that a cabin enroute inspection will be conducted.

   c) The inspector must conform to the operator's approved carry-on baggage program. If there is any concern that the inspector's baggage will exceed operator limitations, the baggage should be checked.

E. PERFORMING THE CABIN ENROUTE INSPECTION

The attention of the flight attendants must not be diverted from assigned duties including passenger enplaning, deplaning, and inflight service. Surveillance of flight attendants' awareness and following of safety related procedures should continue during the flight. However, when possible, equipment inspection and discussions with the crew should be conducted before or after the flight, preferably while no passengers are on board.

1. Interior Inspection:

   a) This inspection should be performed without disturbing the loading and/or unloading of the passengers. Any discrepancies noted should be brought immediately to the attention of the lead flight attendant.

   b) Crew members should initially be briefed to continue their assigned duties as if the inspector was not present. The inspector should then request that a crewmember provide a flight attendant manual and be available for a
discussion relating to the crewmember's duties, at the crewmember's earliest convenience.

c) Some operators require flight attendants to accomplish a pre-flight inspection of at least some of the emergency and safety equipment in the cabin. In such a case, the inspector should observe the flight attendant inspect the equipment and then perform an additional inspection of selected equipment.

NOTE: An inspector can determine whether the operator requires a flight attendant to conduct pre-flight by examining the flight attendant manual.

d) When a flight attendant pre-flight equipment inspection is not required by the operator or has already been performed, the inspector should inspect the equipment. If there is not enough time to inspect the emergency equipment before the flight, the inspector may choose to inspect it after the flight.

e) Inspectors/specialists should avoid impeding the flow of passenger traffic or in any way interfering with crewmembers conducting their respective duties. Since passengers are naturally curious about an inspector's activities, it is recommended that reasonable passenger inquiries be answered in a brief, factual and courteous manner.

2. In-flight Monitoring: This phase of inspection includes the activities associated with boarding, pre-departure, in-flight, and landing.

a) During this part of the inspection, the inspector will have the opportunity to:
   * Evaluate the effectiveness of flight attendant training programs
   * Evaluate operator procedures
   * Determine adherence to company policy, CAA regulations, and safe operating practices

b) Passenger safety must be closely monitored during this phase.

c) The inspector will have the opportunity to ensure that the flight attendants perform all safety related duties and normal emergency tasks per the guidance in the operator's accepted manual.

3. Required Flight Attendants: When regulations require flight attendants for the operation of a flight, the number required is based on the number of passenger seats and is listed in the operations specifications.

a) There must always be a full complement of flight attendants at originating and terminating points when passengers are on board. Regulations permit an operator to substitute personnel, qualified in emergency evacuation procedures for that specific aircraft, at intermediate stops. Substitute personnel must be easily identified.

b) Additional, "non-required", flight attendants may be used by the operator. These additional personnel do not have to be seated during taxi if performing safety related duties.
F. DEFERRED MAINTENANCE

(1) Minimum Equipment List (MEL)/Deferred Maintenance: The operator's approved Minimum Equipment List allows the operator to continue a flight or series of flights with certain inoperative equipment. The continued operation must meet the requirements of the MEL deferral classification and the requirements for the equipment loss.

(2) Other Deferred Maintenance
   a) Operators frequently use a system to monitor items that have previously been inspected and found to be within serviceable limits. These items are still airworthy, yet warrant repair at a later time or when items no longer meet serviceable limits. This method of deferral may require repetitive inspections to ensure the continuing airworthiness of the items. Examples of items that are commonly deferred in this manner are overhead storage bins, seatbelts, and interim airworthy repairs.
   b) Passenger convenience item (not safety/airworthiness related) deferrals should be handled per the guidelines of the operator's program.

G. PROCEDURES

(1) Initiate Cabin Enroute Inspection According to the District Office Work Program

(2) Prepare for the Inspection
   a) Contact the operator to reserve the cockpit jump seat.

(3) Coordinate with the Operator at least one hour prior to the flight.
   a) Identify yourself to the operator representative and state that you are performing a cabin enroute inspection on a specific flight.
   b) Present CAA credentials, to the operator representative.
   c) Obtain applicable operator boarding authorization per the airline procedures.
   d) Request access to the aircraft as soon as practical, (after passengers have deplaned, etc.) to meet the flight and cabin crews, and perform the interior pre-departure inspection, as time permits.

(4) Coordinate with the Crew: Before boarding the aircraft or performing any inspection:
   * Identify yourself to the Captain and lead flight attendant as a CAA inspector
   * State the purpose of the inspection

(5) Perform the Interior Inspection. The inspector should inspect the following, as applicable:
   a) Cabin placarding, markings, and signs (e.g., exits, no smoking signs, emergency equipment), to ensure marking legibility and the correct location
   b) Fire extinguishers for the following:
To verify the quantity and location
* To ensure that they are properly serviced, tagged, and stowed

c) Portable oxygen bottles for the following:
* To verify the quantity and location
* To ensure that they are properly serviced, tagged, and stowed
* To determine the condition of the mask, tubing, and connectors

NOTE: The mask/hose is not required to be connected to first aid oxygen bottles.

d) Protective Breathing Equipment for correct location, proper number of units, and proper stowage

e) First Aid Kits and Emergency Medical Kits for correct number, location, and stowage

f) Megaphones for correct number, location, general condition, and proper stowage

g) Passenger Briefing Cards to ensure the following:
(i) That they are available for each passenger
(ii) That they are appropriate to the aircraft
(iii) That they contain the required information, to include the following:
* Emergency exit location and operation
* Slide use and location
* Oxygen use
* Seatbelt use
* Flotation device use and location
* Appropriate pictorials for extended overwater operations including ditching exits, life preservers, and life raft or slide raft in-flight location

h) Passenger seats, to ensure the following:
* That a reclined seat does not block emergency exits
* That the seat cushions are intact
* That the tray table latching mechanisms are operable
* That the self-contained and removable ashtrays are in serviceable condition and are available
* That seatbelts are operational and not frayed or twisted

i) Passenger Oxygen Service Units to ensure that they are closed and latched, without any extended red service indicators or pins

j) Flight Attendant Station, to ensure the following:
* That the seat retraction/restraint system is operational and is properly secured
That the seatbelts are operational and not frayed or twisted
* That the seat cushions are intact
* That the seat headrest is in the correct position
* That the PA system and interphone are operable
* That aircraft installed flashlight holders are installed

**NOTE:** Flashlights are not required to be in the holders, however, when they are, they must be charged and operable.

k) Galleys, to ensure the following:
* That the latching mechanisms (primary and secondary) are serviceable
* That the tie-downs are serviceable
* That the restraints are in an operable condition
* That the cover and lining of trash receptacles fit properly
* That the hot liquid restraint system is operable
* That the circuit breakers and water shutoff valves are accessible and properly identified
* That the nonskid floor is serviceable
* That the girt bar is clean and serviceable
* That the stationary cart tie downs (mushrooms), are clean
* That the galley carts are in serviceable condition and properly stowed
* That the lower lobe galley, if applicable, emergency cabin floor exits are passable and not covered by carpeting

l) Galley Personnel Lift (if applicable) to ensure that it does not move up or down with the doors open and that the activation switches operate properly

m) Lavatories to ensure the following:
* That the smoke alarm, placards, and ashtrays are present and operational
* That the trash receptacle covers and lining fit properly
* That the automatic fire extinguisher system is serviceable

n) Stowage Compartments to ensure the following:
* That the weight restriction placards are mounted
* That the restraints and secondary latching mechanisms are operable
* That the compartments comply with stowage requirements for accessibility to emergency equipment

o) Crew baggage to ensure that it is properly stowed
p) Emergency Lighting System to ensure that all emergency lighting, including the floor proximity escape path system, is in serviceable condition, e.g., no cracked/missing covers

q) Exits to ensure the general condition of the following:
   * Door seals
   * Girt bar and brackets
   * Handle mechanisms
   * Signs and placards
   * Slide or slide raft connections and pressure indications
   * Lights

H. Pre-departure

1) Ensure any discrepancies noted during pre-departure are addressed per the operator's manual.

2) Ensure that the required numbers of flight attendants are aboard.

3) Observe the flight attendants/ground personnel coordinating and supervising the boarding of passengers and properly stowing carry-on baggage.

   **NOTE:** Ensure that the passenger loading door is not closed until a required crewmember verifies that each piece of carry-on luggage is properly stowed. Proper stowage includes ensuring that the overhead bins are closed. Items that cannot be stowed must be processed as checked baggage.

4) Ensure that items such as carry-on baggage and galley supplies do not cover or in any way interfere with aircraft emergency equipment in the overhead compartments.

5) Ensure that a required crewmember verifies that passengers seated at the emergency exit row seats meet the regulatory requirements.

   **NOTE:** At some time prior to takeoff, the flight attendant must brief the passengers seated in the emergency exit row seats on the selection criteria and their willingness and ability to perform the functions, according to the operator’s approved program.

6) Ensure that all passengers are seated prior to any ground movements.

7) Ensure that the flight attendants have sufficient time to take their assigned positions and to secure their restraint systems after giving the passenger briefing.

8) Ensure that the flight attendant pre departure briefing is audible to all passengers and covers the following subjects:

   a) Smoking: When, where, and under what conditions smoking is prohibited, including a statement that federal law prohibits tampering with, disabling, or destroying any smoke detector in an airplane lavatory

   b) Exit Locations: The preferred method is to physically point out exits

   c) Seatbelt Use: Instructions on how to fasten, unfasten, and adjust seatbelts

   d) Flotation Devices: Instructions on the location and use of required individual
flotation devices

e) Oxygen Use: Instructions on the location of and a demonstration on the use of the oxygen mask

f) Extended Overwater Operations: Instructions on the location, donning, and use of life preservers, life rafts (or slide rafts) and other means of flotation

(g) Special Passenger Briefings (when applicable): for persons who are handicapped or warrant some other special kind of attention and for the individuals assisting them

I. Movement on the Surface

1) Ensure that during the taxi that all flight attendants remain seated unless performing safety related functions. Safety related activities can include the following:

* Passenger preparedness
* Baggage/cargo/galley stowage
* Exit readiness

2) Ensure that the following items or activities are accomplished prior to takeoff:

a) Each exit is closed and locked with the girt bars properly attached (if applicable)
b) All stowage compartments are properly secured and latched
c) The galley is prepared as follows:

* Loose items are secured
* All serving carts are properly restrained
(d) The cockpit door is closed or open in accordance with the operator's manual
(e) Passenger seatbelts and shoulder harnesses, if installed, are secured
(f) Any other equipment is properly stowed and secured

3) Ensure that crewmembers observe the sterile cockpit rules.

J. In-flight Operations

1) Monitor the crewmembers' performance during in-flight operations, to ensure the following:

a) During the takeoff:

* That each flight attendant is seated with restraint systems properly fastened
* That any unoccupied flight attendant seat is properly secured for takeoff

b) After takeoff, before or immediately after the seatbelt illumination is shut off; ensure that an announcement is made that passengers should keep their seatbelts fastened, even when the seatbelt sign is turned off.

c) If the flight is to be a smoking flight, when the no smoking sign is turned off, ensure that an announcement is made that smoking is only permitted in specific rows and prohibited in the aisles and lavatories.
2) Ensure that the following are accomplished, as applicable:
   a) Passenger compliance with seatbelt and no smoking signs
   b) Effective crew coordination for flight crew and cabin crewmember communications - routine and/or emergency
   (c) Turbulent air procedures are followed, including the proper restraint of serving carts, galley equipment, and compliance with instructions from the cockpit
   (d) Crew member handling of the passengers, to include:
       * Not serving alcoholic beverages to intoxicated passengers
       * Abusive or disruptive passengers
       * Handicapped or ill passengers
       * Passengers requiring special attention

(3) Ensure that crewmembers, during the approach and landing phases of flight, prepare the cabin for arrival by performing at least the following actions:
   (a) Ensuring that carry-on baggage is stowed and all seatbacks and tray tables are upright and stowed respectively
   (b) Removing all food, beverages, and galley service items from each passenger seat location
   (c) Ensuring that all stowage compartments are latched and secured
   (d) That the galley is prepared as follows:
       * Loose items are secured
       * All serving carts are properly restrained
   (e) Ensuring that the cockpit door is closed or open, in accordance with the operator's manual
   (f) Verifying that passenger seatbelts and shoulder harnesses, if installed, are secured
   (g) Properly stowing and securing any other equipment

(4) Ensure that crewmembers observe sterile cockpit rules.

(5) Ensure that crewmembers are seated, before landing, at assigned duty positions, with appropriate restraint systems fastened.

K. Flight Arrival

(1) Ensure that after landing, the flight attendants prepare the aircraft for arrival by performing the following duties:
   * Before the captain has turned off the seatbelt sign, ensuring that passengers remain in their seats with seatbelts fastened
   * Upon arrival at the gate and after the seatbelt sign has been turned off,
preparing the exits for deplaning

(2) Ensure the appropriate complement of flight attendants remain on board the aircraft at enroute stops (when passengers remain on board the aircraft to proceed to another destination)

(3) Debrief the captain and lead flight attendant of any procedural problems or discrepancies/malfunctions noted during the flight.

L. TASK OUTCOMES

A. File inspection form

B. Completion of this task can result in the following:
   - Satisfactory inspection
   - Issue of an Audit Finding form
   - Requirement for a follow up inspection for a particular discrepancy


M. FUTURE ACTIVITIES

Schedule follow-up inspection as applicable

N. ENFORCEMENT ACTION

If deficiencies are identified during the conduct of cabin En-route check and indicate serious safety concern, take appropriate action when necessary as per Aviation Enforcement Procedure Manual to preserve safety.

Following procedure needs to be followed:

(3) Initiate an internal office memo regarding the serious safety concern along with necessary evidence to superior officer along with recommendation of appropriate enforcement action to be taken as per Aviation Enforcement Procedure Manual.

(4) After approval of the recommendation of appropriate enforcement action from Director General forward the operator with a formal letter regarding the enforcement action that has been taken for the serious safety concern observed during the conduct of ramp inspection.
PART 1. AUDITING PROCEDURES

A. General information

1. Authority - The applicable sections of the State Civil Aviation Regulations which, in turn, are based on the Civil Aviation Act, will provide the basis for the procedures in this chapter of the inspector’s manual.

2. Deviations - Depending upon the nature of the particular problem or job, it may sometimes become necessary to deviate from the policies and procedures outlined in this manual. When a deviation becomes necessary, the Inspector involved should be guided by sound judgment, making certain that all deviations are substantiated, documented and concurred by the Audit Manager. Substantial deviations from this manual must be approved by the Director.

B. DEFINITIONS

Standard audit terminology common to both the authority and industry.

1. Audit - An in-depth review of the activities of an organisation to verify conformance with current regulatory standards.

2. Audit Manager - The appointed leader of a group of individuals conducting an audit.

3. Inspection - The examination of a specific item such as a component, aircraft or in-flight check.

4. Auditee - The company to be audited.

5. Audit Finding - the determination or observation and recording of the adequacy or inadequacy of the conformance of a product, process, or procedure characteristic to the specified standard.

6. Certification - A determination of competence, qualification or quality by the authority for which a certificate, endorsement or other official document is issued in accordance with the procedures approved by the Minister. This includes original issuance, denial, renewal, and amendments to the document and related manuals.

7. Characteristic - Any distinct property or attribute of a product, process, or service that can be described and measured to determine conformance or non-conformance to specified requirements.

8. Confirmation - That the representations (verbal or written) are in accordance with the data or findings obtained from different sources.

9. Conformance - The state of meeting specified requirements of a standard, specification or regulation.

10. Non-Conformance - A deficiency in characteristics, documentation, or procedures which renders the quality of a product or service unacceptable or indeterminate, or not according to specified requirements, e.g. physical defects, test failures, inadequate documentation etc.
11. **Documented** - Recorded in writing, signed, dated and retained.

12. **Audit activities** - Those activities by which information is obtained to verify the auditee’s conformance with the applicable regulations standards, e.g. interviews, observations, examination of evidence, recording, etc.

13. **Observation** - A finding which relates to an unacceptable practice or concern which is not tied to a standard.

14. **Procedure** - A document that specifies as applicable, the purpose and scope of an activity; what shall be done and by whom; when, where, and how it shall be done; what materials, equipment, and documentation shall be used, and how it shall be controlled.

15. **Verification** - The independent reviewing, inspecting, examining, measuring, testing, checking, witnessing, monitoring, or otherwise establishing and documenting, that products, processes, services, and documents conform to specified requirements. This includes confirmation that an activity, condition, or control conforms to requirements specified in documents such as contracts, codes, standards, drawings, specification, program element descriptions, and procedures and technical procedures.

16. **Working Papers** - All documents required by the auditor or audit team to plan and implement the audit. Includes audit schedules, auditor assignments, checklists and report forms used by auditors.

**C. WHY DO WE AUDIT**

1. **Initial Certification** - Prior to the issue of an Air Carrier Operating Certificate all areas of the company will be audited to ensure that the required standards will be met.

2. **Surveillance** - The auditee is audited on a systematic basis to ensure conformance with the standards and conditions of their approved document. The frequency of such audits will be determined at the time of initial certification or by a separate policy.

3. **Request for additional authority** - Prior to granting additional authorities to amend the Air Carrier Certificate, a full or partial audit may be conducted.

4. **Special Purpose Audit** - An audit which was not previously identified as a requirement by the authorities Audit Plan, but deemed necessary due to operational circumstances.

   These audits are non-scheduled in that they are the result of an identified deficiency within the company.

**D. TEAM COMPOSITION, RESPONSIBILITIES AND ATTRIBUTES**

1. **Audit Manager** - To maintain the integrity of the audit process the Audit Manager shall:
   
   i. ensure that all relevant sections within the authority as well as company officials have been advised of the audit dates;
   
   ii. ensure that non audit activities with the carrier are reduced to a minimum throughout the audit period;
   
   iii. ensure that any activities between the authority and the company are co-ordinated through the Audit Manager during the audit period;
iv maintain contact with the Director as appropriate, and report progress of the field work, potential problems, changes to the objectives or scope of work and other significant matters arising during the audit.

v maintain ongoing communication with the senior management of the company;

vi ensures that all decisions and approvals required from the Director are obtained on a timely basis.

vii exercise line authority over assigned audit staff and observers and control time and resource budgets;

viii ensure that all functions of the audit team have been completed prior to releasing the individual members;

ix ensure that all non-conformance items are based on specific regulations/standards and supported by objective evidence and detailed analysis;

x prepare the draft audit report/post-audit letter and debrief the Director as applicable;

xi co-ordinate the post audit meeting with senior company management and the authority.

xii brief the Director of any non-conformance items which may substantiate enforcement action in accordance with the relevant sections of the Airworthiness Regulations.

2. **Team Leader** - The duties of the Team Leader are:

   i to maintain ongoing communication with the Audit Manager;

   ii to plan and manage the audit activities of the team, where necessary assigning Deputy Team Leaders;

   iii to de-brief management upon completion of the audit of his/her speciality area;

   iv to be familiar with the auditing procedure and the associated documentation;

   v to become familiar with the company’s policies, instructions and procedures;

   vi to draft sections of the report as required by the Audit Manager.

3. **Team Member** - The duties of the team member are:

   i to study and expand as necessary the audit checklists applicable to the functions assigned;

   ii to become familiar with the company’s policies, instructions and procedures;

   iii to be familiar with the auditing procedures and associated documentation;

   iv to conduct and document audit field work through all phases of the audit;

   v to ensure that all findings have supporting evidence.

   vi to maintain contact with the Team Leader and ensure that the audit progress is reported and potential problems addressed.
4. **Observer** - The duties of the observer are:
   
i. to be familiar with the auditing procedure and the associated documentation;
   
ii. to accompany the audit team during the entire audit, witness and take notes on its activities;
   
iii. to avoid participation in the audit unless specifically requested to do so by the team leader/audit manager;
   
iv. to address comments only to the accompanying auditors;
   
v. to remain with the assigned group. Assignment to other groups must be approved by the Audit Manager.

5. **Attributes of the Auditing Inspector**
   
i. sound knowledge of the aeronautical regulations and technical expertise;
   
ii. fundamental knowledge of the industry or activity being regulated;
   
iii. skills in communication;
   
iv. be able to anticipate problems and assess the seriousness of observed weaknesses.
   
v. is able to organise his/her work, to question, to look for objective evidence, to construct checklists and use them effectively without being limited by them, etc..
   
vi. has knowledge of the criteria against which the audited object is to be evaluated.

   In addition, inspectors involved in audit assignments require other skills and qualities such as:
   
a) Salesmanship - opening the job in a hostile environment, securing information, the whole truth and selling new ideas or procedures.
   
b) Ability to analyse - to break the whole into parts, and to determine validity.
   
c) Creativity - to develop a clear picture of a situation and to produce a solution.
   
d) Personal Suitability - courtesy, appearance, integrity and competence.

6. **Conflict of Interest and Confidentiality**

   In selection of the Audit Manager/Team Leaders/Members or Observers there shall be no conflict of interest, real or perceived by the auditor, the auditee or others.

   Types of conflict of interest include:
   
- Former employer;
- Organisation ties;
• Direct involvement;
• Acceptance of gifts or favours;
• Family ties.
Confidentiality must be maintained:
• At site or away from the site
• In general, keep the conversation between you and other team members.

E. PHASES OF THE AUDIT

• Initiation
• Audit
• Post Audit

1. The Initiation Phase - This phase includes:
   i Establishing the ‘Need for the Audit’
   The CAA Section proposing the audit will prepare a ‘Briefing Paper’ for the Director including details of the type of audit proposed and expected resources and budgetary expenditure. The Director will appoint the Audit Manager.
   ii Team Selection
   The Audit Manager will negotiate the intended Team Leaders with the respective Deputy Directors and when they are appointed they will jointly nominate the Team Members and confirm their availability for release with the Section Heads. The Audit Manager will then propose the full team to the director for approval.
   iii (a) Team Preparation - Documentation Review
   Review the company files to gain an understanding of current and past events/occurrences, making notes and flag items for further reference.
   Review the auditee’s manuals against the applicable requirements: Operations Manual, Maintenance and or Quality Control Manual, Operating Certificate, Operations Specifications etc., making notes and flagging items for further reference.
   During the documentary review record anything and everything that may be non-compliant, suspect or curious.
   Information gained through this period can be used to add additional questions to the audit checklists.
   During the ‘Documentation Review’ the following questions will assist in assessing the company’s documentation:
   • Scope: Is there a scope statement identifying what each procedure/description covers? Does it include the purpose?
   • Completeness: Are all the activities described?
CIVIL AVIATION AUTHORITY OF NEPAL
AIRWORTHINESS INSPECTOR HANDBOOK

- **Language:** Is the documentation written in a language that can easily be understood by the people who have to read it, follow it or implement it? Is it simple and practical? Is it free of all ambiguity or ‘double talk’ and conflicting statements?
- **Responsibilities:** Does it clearly specify who is responsible for what?
- **References:** Are the required documents and records identified and their use explained?
- **Forms:** Are sample forms included and referenced in the descriptions?
- **Review:** Are there arrangements to ensure that the documentation is reviewed by the appropriate people? Is there a mechanism for ensuring the documentation is kept current, up to date and properly supported?
- **Access:** Does it clearly identify all the areas and individuals that might need access to the documentation and ensure that access?
- **Changes:** Is there provision to ensure that all changes receive the same care and authorisation as the original?
- **Obsoleted Documents:** Is there a provision for removal of obsolete documents?

Reference Material - The following legislative documents and manuals should be readily available. Team members must ensure that all reference documents include the latest amendments.

- Aviation Act
- Civil Aviation Regulations
- Advisory Circulars issued by the Authority
- Advisory Circulars adopted by the authority
- Instructions to staff
- Policy Letters
- Notices To Operators
- Aircraft Flight Manuals & MELs
- Aircraft Maintenance Overhaul & Repair Manuals
- Type Certificates and Type Certificate Data Sheets
- Airworthiness Directives

iii (b) Team Preparation - Audit Plan

The Audit Plan will be prepared jointly, by the Team Leader Operations and the Team Leader Airworthiness. The plan will be approved by the Audit Manager.
INTRODUCTION

1. General

An audit of _________ Airlines main base is scheduled for the period ____ to ___. Audits of the Route Stations will follow during the period ____ to ____.

2. Objectives

The objective of the audit is to conduct an analysis of _________ policies, standards, procedures, and facilities with respect to aircraft operations and maintenance, in order to ensure that conformance with _________ delegated authorities and legislative requirements are being met, and that maximum provision for flight safety is practised.

3. Procedure

Standard audit procedures will be used throughout, and will include interviews with management, supervisory and other _________ personnel, facility inspections and a review of the related policies, procedures, standards and records utilised by the company.

SCOPE OF THE AUDIT

4. General

To determine the adequacy of facilities, policies, procedures, standards, and personnel qualification, the procedures detailed in this Section will be applied, but not necessarily limited to the following _________ departments:

A. AIRWORTHINESS

<table>
<thead>
<tr>
<th>Code</th>
<th>Topic</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>Maintenance Control Manual</td>
<td>a review of the _____ approved Manuals for applicability, approval status, completeness and conformance with the Regulations</td>
</tr>
<tr>
<td>A-2</td>
<td>Technical Publications</td>
<td>a review of other related _____ and the authority’s publications for applicability, approval status and completeness</td>
</tr>
<tr>
<td>A-3</td>
<td>Company Quality Audits</td>
<td>the effectiveness of the company’s quality audits (in house, sub contractors, route stations and line stations, leases etc.)</td>
</tr>
<tr>
<td>A-4</td>
<td>Engineering</td>
<td>Engineering procedures as related to quality control and maintenance; (Airworthiness Directives, Modifications, Repair Schemes, TSO Changes, Test</td>
</tr>
<tr>
<td>A-5</td>
<td>Support/Overhaul Shops</td>
<td>support/overhaul shops for conformance to approved procedures</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>A-6</td>
<td>Aircraft Maintenance Records</td>
<td>aircraft records, flight time and technical logs, inspection intervals, certification and release to service</td>
</tr>
<tr>
<td>A-7</td>
<td>Sample Aircraft for Conformance</td>
<td>a selected sample of aircraft for conformance with acceptable standards and the maintenance control manual</td>
</tr>
<tr>
<td>A-8</td>
<td>Parts/Material Control &amp; Storage</td>
<td>parts and material control including source inspections, parts pooling procedures, certification of foreign purchases, parts, etc.</td>
</tr>
<tr>
<td>A-9</td>
<td>Maintenance Program</td>
<td>Maintenance programs as related to airframes, engines and aircraft components</td>
</tr>
<tr>
<td>A-10</td>
<td>Reliability Program</td>
<td>reliability programs as related to airframes, engines and aircraft components</td>
</tr>
<tr>
<td>A-11</td>
<td>Minimum Equipment List (MEL) &amp; defect control</td>
<td>Procedures relating to MEL, conformance with the MMEL, configuration deviation, defect related ferry flights and defect control</td>
</tr>
<tr>
<td>A-12</td>
<td>Test Flights</td>
<td>Maintenance related test flights</td>
</tr>
<tr>
<td>A-13</td>
<td>Maintenance Contracts</td>
<td>Maintenance contract arrangements with respect to lease aircraft, owned aircraft, scheduled and charter flight maintenance, monitoring procedures etc.</td>
</tr>
<tr>
<td>A-14</td>
<td>Certification of Components</td>
<td>control of and procedures for certification of components both in country and at foreign repair facilities</td>
</tr>
<tr>
<td>A-15</td>
<td>Mandatory Defect Reporting</td>
<td>reporting and investigation of Service Difficulties &amp; Major Defects</td>
</tr>
<tr>
<td>A-16</td>
<td>Airworthiness Directives/Bulleti</td>
<td>records of compliance and conformance procedures</td>
</tr>
</tbody>
</table>
### Operations Conformance

<p>| A-17 | Maintenance Training Standards OPERATIONS | facilities, program. Curriculum and records for initial and on going training |
| A-18 | Licensing Certification Standards | standards and procedures for maintenance and inspection personnel |
| A-19 | Fuelling/fire Prevention | refuel/defuel procedures, fire fighting and training for ramp and maintenance personnel |
| A-20 | Facilities/General | adequacy of hangar facilities and support shops for intended maintenance and overhaul |
| A-21 | Test Measuring Equipment | adequacy of calibration system, traceability to a national standard, records and compliance with system |
| A-22 | Weight &amp; Balance | aircraft weighing - initial and repeat, compilation of weight and centre of gravity schedules. |
| A-23 | Corrosion Control/Ageing Aircraft Program | compliance with mandatory requirements and manufacturers recommendations. participation in National/International seminars etc. |
| A-24 | Non Destructive Testing | qualified personnel, facilities, equipment and control procedures. |
| A-25 | Other Specialised Work | |
| A-26 | Ground support equipment | adequacy for each fleet, maintenance and calibration of electrical units etc. |
| A-27 | | |
| A-28 | Route Stations and Line Stations | staffing, facilities, procedures, records and equipment |</p>
<table>
<thead>
<tr>
<th>O-1</th>
<th>Company Operations Manual</th>
<th>review of approved manuals for applicability, approval status, completeness and conformance with Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-2</td>
<td>Ops Specs</td>
<td>review for completeness and conformance</td>
</tr>
<tr>
<td>O-3</td>
<td>Manuals - AOM, AFM, EM etc.</td>
<td>review of other related company and the authority publications for applicability, approval status, completeness etc.</td>
</tr>
<tr>
<td>O-4</td>
<td>Flight Crew Training Programs &amp; Company Check Airman &amp; Instructor</td>
<td>review all training programs against regulations. Review qualification and selection requirements of company check airman and instructors.</td>
</tr>
<tr>
<td>O-5</td>
<td>Flight Crew Training Records and Currency</td>
<td>review pilot’s record keeping system against the requirements.</td>
</tr>
<tr>
<td>O-6</td>
<td>Simulator Evaluation</td>
<td>review adequacy of simulators against training needs and control procedures etc.</td>
</tr>
<tr>
<td>O-7</td>
<td>Dispatch &amp; Flight Watch</td>
<td>flight dispatch centres, procedures and training of dispatchers.</td>
</tr>
<tr>
<td>O-8</td>
<td>Flight Documentation</td>
<td>review of sample flight documentation both for pre-flight, during and post-flight</td>
</tr>
<tr>
<td>O-9</td>
<td>Passenger Safety</td>
<td>Flight Attendant manual, procedures, training and records</td>
</tr>
<tr>
<td>O-10</td>
<td>Cabin Crew and FOO Training &amp; Records</td>
<td>review cabin and FOO training and records, including currency against requirements.</td>
</tr>
<tr>
<td>O-11</td>
<td>Flight Safety Programs</td>
<td>review the function of the flight safety office and content/effectiveness of safety programs</td>
</tr>
<tr>
<td>O-12</td>
<td>Aircraft Documentation</td>
<td>inspect aircraft for required documentation and review the system to determine compliance with the</td>
</tr>
</tbody>
</table>
iii (c) Team Preparation - Pre Audit Team Meeting

The purpose of this meeting is to ensure that all members understand:

- The material which has been presented to them i.e. Timetables, Audit Plan, etc.
- Their duties and responsibilities.
- Their specific audit area.
- The audit check lists.
- The position of any observer.
- The team plan in general.

Any questions regarding the audit should be answered at this time. Any differences should be discussed before leaving for the audit.

2 The Audit Phase - This phase includes:

i Pre Audit Company Meeting

Preliminary preparation coupled with the following guidelines will provide the basic elements of a successful meeting.

The meeting should:
take place on the auditee’s premises;
be attended by all senior management levels;
provide maximum information regarding Audit and related procedures;
be concise but precise, brief but clear.

The Audit Manager should:
introduce all members of the audit team with a brief background of each, including observers;
explain purpose of the Pre-Audit Meeting;
state the objective and scope of the audit;
explain the method of performing the audit;
cover the method of communication between the Audit Team and the Auditee;
explain the method of handling any non-conformance’s detected;
establish a time and place for the Post-Audit Meeting;
answer any and all questions put forth by the auditee.

By the end of this meeting, both sides should have a clear understanding as to what will take place.

Agreement should be reached between both parties regarding the Auditee’s provision to the Audit Team for adequate working facilities including:
Office or Conference Room
Photocopier
Secretarial assistance
Measuring or Test Equipment

Conformation should be obtained in writing of the agreement to provide the required facilities etc.

The Audit

The audit will be conducted against an ‘Audit Checklist’ compiled from the topics described in the ‘Scope’ and constructed into the ‘Audit Plan’.

To detect a non-conformance, a guideline that reflects the standard must be followed. In this way the Checklist tells you what should be happening and observation confirms what is happening.

The gap between should and is will generally be a non-conformance.

The Audit Checklist must:
be used when monitoring a process, procedure or program;
be updated to reflect the latest revision;
be complete in its entirety;
be signed by the auditor (Team Member) responsible for that audit area;
get you started, keep you on track, confirm completion; and
be as flexible as necessary to add questions to support specific situations.

If used correctly, the audit checklist can be an extremely valuable auditing tool. However, if not handled correctly, it can ruin a good audit.

The following guidelines will assist in getting the most effective use from the check list:
a) When you (as auditor) enter a department or area, ask the host to explain how the system works.
b) Question how the personnel work in accordance with the system.
c) Evaluate the above information against the Standard/Manual, and decide if it meets or fails to meet the requirements.
d) Record examples of numbers, procedures, documents, drawings, measuring and testing equipment in each area.
e) Finally use the checklist to ensure that all aspects of the requirements have been met.

Note: Never gain access to files or other company documents without appropriate authorisation.
Company representative should be present during document review whenever possible.

The three main steps in conducting a physical audit are:

- Observing
- Interviewing
- Documenting

It should be noted that all steps, Interviewing, Observing and Documenting are on-going and inter-related. There is no specific sequence to be followed.

Observing - This is normally the first step and is common to all types of physical audits. Your observations will lead you into those areas that may or may not require more investigation.

Observing is a learned skill that will improve with each audit carried out.

Interviewing - The interview is probably the single most important element of any audit. The success of your audit will be largely dependent upon your skills as an interviewer.

Each interview scenario will be different. You will have to assess the climate and decide on the approach to take - whether friendly or formal - or somewhere in between.

Generally speaking it is good practice to establish a friendly atmosphere, if possible, at the beginning of the interview (small talk in known areas of common interest) and then outline the roles to be played by both parties.
The following points will be helpful in developing or improving your personalised interview technique:

- Make personal contact with your subject immediately.
- Keep the contact ‘human’.
- Five minutes of warm-up before you start will pay off in good co-operation.
- Describe the assignment briefly so that the person being questioned will see their part in the total picture.
- Make him/her feel he/she is on the ‘inside’.
- Invite him/her to feel the importance of his/her role in the program.
- Have an outline of the material you intend to cover.
- Use this as a guide to be sure you are getting all the data.
- At the start of the interview, put company representatives at ease and ask them to describe things in their own words.
- Start the interview with the least complex, simple questions to alert the company representative to the type of questions that will be asked.
- Be flexible with the questions asked.
- Rephrase or reword the sentences if they prove too complex, confrontary or open to misunderstanding in any way.
- Listen to the answer provided (do not interrupt if at all possible) and restate the respondent’s answer to avoid any misunderstanding. (paraphrasing)
- Do not hesitate to request additional information or explanation if there is any chance of a misunderstanding.
- Be sure to note data such as the names of persons interviewed and their titles.
- Identify each interview separately for easy identification.
- Indicate page number and date.
- Take care in writing so you can easily read your own notes.
- Record the relevant details immediately - do not rely on your memory.

Here are some valuable **Don’ts** that apply to all interviewing:

* Do not harass or talk down to the respondent.
* Avoid challenging respondents even if their statements are contradictory.
* Don’t begin an interview with preconceived ideas about the auditee or the particular area.
* Don’t interrupt the story to insert your own ideas.
* Don’t let the interview get diverted into areas that are obviously not pertinent.
* Don't let blanket statements or broad generalisations obscure the facts.
* Don't let half-understood problems go.
* Don't follow an established sequence of questions just because you have them written down or memorised.
* Don't be overpowered by the person being interviewed, be sure you leave feeling you were the interviewer and not the interviewed.
* Don't become involved in operational problems or offer solutions that will distract from the primary purpose of information gathering.
* Don't waste the auditee’s time.
* Don’t think and plan on his time, do your preplanning in advance of the interview.
* Don’t ask CLOSED questions that can be answered with YES or NO.

1.1.1 Sampling

The sample size of a population and selection criteria have a direct impact on the validity and confidence level of the results. The following guidelines should be used:

(a) each sample group must stand-alone. If there are 1400 pilots, 2800 flight attendants, 180 maintenance personnel, and 15 dispatchers, each of the four groups must be considered separately;

(b) the P goal is to achieve a 95 per cent confidence level with the results of the sample tested. Often, this goal may not be appropriate; therefore, the audit team must carefully consider both the sample size and the time devoted to the task. Random sampling may be considered an acceptable alternative;

(c) the chart found in the Appendix will help determine the sample size needed to achieve a 95 per cent confidence level for populations of 400 or more. For smaller populations, a larger sample must be examined and the following guide should be used:

<table>
<thead>
<tr>
<th>Population</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>100:</td>
<td>50 per cent</td>
</tr>
<tr>
<td>199:</td>
<td>40 per cent</td>
</tr>
<tr>
<td>399:</td>
<td>35 per cent</td>
</tr>
</tbody>
</table>

Recording and Documenting

In taking notes during the audit to record findings and observations remember to:

a) Identify the area; function; process; program etc.

b) Identify the time; date and location.

c) List examples in detail - 3 or 4 are sufficient.

d) Record serial numbers and revision numbers.
c) Note all supporting documentation.

d) Note all references to conversations.

e) Record any other information which will allow you to gain additional insight.

f) Note: Anything and everything will help you and the team as a future reference.

h) Reference the checklist number.

j) Take time to write clearly - to be a good record it has to be legible.

k) Use whatever abbreviations you can live with.

l) Make sketches if necessary.

The necessity of a successful record is to ensure recall for later use as a possible documented recording and for discussion with other team members.

The importance of accurate note taking and record keeping cannot be over emphasised. Notes must be complete in every detail for use in confirming and substantiating what you have seen and heard, when required to document the findings in the report.

iii Analysis of Findings

Analysis is the keystone in conducting audits. It is an organised method of identifying problem areas with a logical approach to determine necessary corrective action and is used:

• to ensure that the audit is based on a valid objective and accurate assessment of the organisation or facility;

• to identify a problem at its source and pinpoint the cause at its highest level;

• to ensure standardisation of problem determination; and to have a documented record of the process used when establishing non-conformances.

Analysis should be used after recorded observations, at the end of each day or at the daily team meeting - always the sooner the better.

AUDIT FINDING

Audit Findings are recorded on form .... and form the most important record for both the authority and the company being audited. It is therefore extremely important that the form is completed accurately and in sufficient detail to be ‘stand-alone’.

All Audit Findings must;

• Specify the Area of Audit (Topic from the Scope)

• Identify the reference standard - the requirements/Manual/Procedure;

• Quote specific details - ‘Objective Evidence’.

It must be noted that the company representative who signs (if required) against the finding is purely signing to confirm that the recorded situation was correct at the time the auditor made the finding. He is not necessarily the person responsible for the area or function detailed and should not be held accountable for the finding or corrective action.
At the time of the audit finding being recorded the corrective action will not be detailed and may not be until after the audit has been completed and exit meeting held with the company.

Completed forms that in any way do not meet the above criteria can not be passed to the company as ‘Audit Findings’.

It is not the auditors function or responsibility to establish blame for the ‘finding’ or at this stage of reporting to attempt to establish a ‘Root Cause’.

The Audit Finding forms should be completed by hand and passed to the Deputy/Team Leader each day. The administrative assistant will then key the details of the form into the system to produce the printed version.

**CONFIRMATION REQUEST**

Proper use of the Confirmation Request Form …… can greatly reduce Inspector workload during the Initiation and Audit Phases. For example, when an auditee appears to have missed a required maintenance operation an Inspector could have to review a considerable amount of paperwork to secure confirmation. To avoid that time consuming operation, the company would be issued with a Confirmation Request Form (CRF) requesting proof that the apparently missed item had in fact been correctly completed at the scheduled time.

In following this process the auditee is afforded the opportunity to prevent aircraft ‘grounding’, and it also ensures that the auditor is in possession of all the facts before proceeding with further action. This means that the auditor has saved valuable time by not having to search through the records system to produce necessary supportive information. In addition the auditor receives a signed document from the auditee to use as part of the supportive evidence package.

The CRF is effective because:

- where initial evidence indicates a non conformance, the burden is on the company to show otherwise;
- the auditor makes the final determination based on auditee produced facts as to which direction to proceed;
- the auditor is compelled to view the state of the company records management system from the auditor’s perspective;
- arbitrary findings based on subjective examples are eliminated;
- the auditee is not faced with major surprises at the end of the audit because all contentious issues have been dealt with in an open manner; and
- the auditor has more time to devote to the business of auditing rather than chasing a paper trail.

**Audit Record Log**

Each Team Leader will maintain a record log, to be updated daily, of all ‘Audit Findings’ and ‘Confirmation Requests’. The format and control of the log will be decided by the
Team Leader. This may vary from a simple title, time and date book to a direct file of photocopied duplicates. Each form will have been assigned a sequential number for accountability. This process will ensure that at the end of the audit, all forms have been satisfactorily answered and appropriate action taken.

This log will ultimately form part of the formal audit record.

iv Communications during the audit:

a) Within the Team

It is essential that each Team Member continuously inform his Deputy Team Leader of both the progress of his auditing and the findings/confirmation requests that are raised.

It is essential that Team Members do not engage in debates with the auditee. Any dispute in interpretation of the standards or aspect of a finding must be referred to the Team Leader.

At the end of each day of the audit, the Team Leader will conduct a meeting to review the days progress and confirm that the audit plan is on schedule.

The results of this meeting together with the ‘Audit Findings’ and ‘Confirmation Requests’ will then be passed by the Team Leader to the Audit Manager.

b) Between the Team and Auditee

The Audit Manager is responsible for communications with the auditee and will hold regular meetings during the course of the audit to ensure that the senior management of the company is fully aware of both progress and findings.

c) Safety Issues

During the course of the audit, should at any time a ‘Safety Issue’ be noted this must immediately be reported to the Team Leader. The Team Leader will contact the Audit Manager and determine what the approach will be to the company.

Once notification has been made to the company it is expected that they will take the initiative to correct the ‘threat to safety’. In the event that the company does not take immediate action the Audit Manager will determine the action to be taken by the Team to resolve the issue.

v Post Audit (Exit) Meeting

Once the entire audit is complete, the audit Manager shall conduct the final briefing with the auditee. The Audit Manager and Team Leader(s) will make the determination of how many Team Members attend the meeting and who will speak at the meeting other than him/herself and the Team Leaders.

This meeting must not come up with any surprises to the auditee, it will be a summary of the briefing sessions held throughout the course of the audit. If this meeting is a shock to the management it is evidence of procedures not being followed during the course of the audit.

The speakers must present their findings in a clear and concise manner.

The meeting should:
be chaired by the Audit Manager;
be cordial, diplomatic, clear, and polite;
take into account the personalities and background of the company representatives;
thank the auditee for their co-operation;
summarise audit findings;
state the areas of strength as well as the areas that are deficient;
outline the progression of the report following the meeting;
explain the company’s obligations regarding the corrective action plan;
state how the response system works; and

discuss follow-up action.

3. **The Post-Audit Phase – This phase includes:**

   i. **The Audit Report**

   The ‘Audit Report’ is a complete report describing both the organisation and the findings of the audit, it does not include the Team recommendations as a result of the audit. Recommendations will be made following agreement of the corrective actions and be in a supplementary document to the report.

   The audit report should cover:

   a) **An overview of the auditee.**

      • history and development of the company with detail of current operations, bases and sub bases;
      • details of fleet;
      • staffing
      • contracts for operations and maintenance.

   b) **Auditee’s organisational structure.**

      • positions and names of key personnel, including charts where this is the easiest format.

   c) **Date of Audit and locations covered.**

   d) **The Audit Team**

   e) **Purpose of the audit.**

   f) **Types of Findings.**

      • audit Findings of ‘Non Conformance’;
      • observations.

   g) **The coverage of the audit.**

      • list the areas audited and the references used in the Audit Findings.
h) Overall Conformance.

- detail the areas where conformance was found;
- summarise areas of non-conformance, giving examples.
- state that copies of all non conformance Audit Findings are attached.

**Note:** This section of the report forms the ‘Executive Summary’, the Audit Manager will determine whether it should lead the report or be contained within the body of the report.

1.1..2 ii Parallel Report

(1) An audit may identify observations and/or deficiencies in, or the misapplication of, Civil Aviation legislation, policies and procedures. Where an observation or deficiency indicates a need for revised policies, standards, procedures or guidelines, a finding shall be made against Civil Aviation and not the auditee. Where a non-conformance to a regulatory requirement is found, and that requirement required Civil Aviation approval (i.e., document or manual approval), a finding shall be made against the auditee (so that the non-conformance is resolved through the Corrective Action Plan) as well as Civil Aviation.

(2) Findings against Civil Aviation will be described in a document called the parallel report. The audit manager will forward the parallel report to the Director within 30 days of the completion of the audit and shall identify the problem, cause, responsibility and recommended solution for each finding. All supporting documentation shall be included in the parallel report.

(3) Civil Aviation deficiencies shall neither be included nor referenced in the audit report.

1.1..3 Parallel Report Follow-Up

Parallel report items shall be forwarded to Director who will assign an appropriate office for co-ordination and follow-up of those deficiencies.

**Approval and Distribution**

The report will be agreed by the full team and approved by the Audit Manager.

Distribution will be to:

- The Auditee
- Team Members
- Director

iii Auditee Corrective Action Proposals.

Before the Team can make a final recommendation as a conclusion of the audit the auditee’s proposals for corrective actions must be received, reviewed and accepted.

In the Post-Audit Meeting the company will have been requested to forward all corrective action proposals through the Team Leaders who will then be responsible for prompt review by the team members.

Depending on the nature of the audit findings, the company’s corrective action should involve:
(a) **Immediate Corrective Action**: This is action taken immediately upon identification of the audit finding to remove the immediate threat to aviation safety;

(b) **Short-Term Corrective Action**: This is short-term action to correct a non-conformance that does not pose an immediate threat to aviation safety, which ensures that conformance is established quickly until long-term action is completed to prevent recurrence of the problem. Short-term corrective action will normally take place within 30 days; and

(c) **Long-Term Corrective Action**: This is longer-term action and has two components. The first will involve identifying the cause of the problem and indicating the measures the company will take to prevent a recurrence. These measures should focus on a system change. The second component will include a timetable for company implementation of the long-term corrective action. Long-term corrective action will normally take place within twelve months.

Long-term corrective action should be accompanied by the forwarding of supporting documents for review. Short-term corrective action should also be accompanied by the forwarding of supporting documents, which may take the form of logbook entries, purchase orders, memoranda or revised inspection procedure cards. It is important to verify as much supporting documentation as possible during subsequent surveillance.

When the Team Leaders are satisfied that all corrective action proposals have been received a full team meeting will be convened to formulate and agree the final recommendations. These recommendations will form a supplement to the Audit Report and should include:

- an overall recommendation based on the particular objectives of the audit;
- acceptance or otherwise of the scheduled compliance time for corrective actions;
- frequency of follow-up to the findings; and
- period and extent of future surveillance.

The Audit Manager will present the final recommendations to the Director (for approval). Subject to approval by the Director, the final result of the audit can then be forwarded to the company.

iii  Follow-up

The Team Leaders will control and monitor the follow-up to all corrective actions, using the applicable team member for the corrective action to the Audit Finding that he/she raised.

When the necessary follow-up has been completed and is satisfactory the result will be notified to the Director and the audit file retained for future audit reference.
## Audit Finding Form

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Base Location</th>
<th>File</th>
</tr>
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<tbody>
<tr>
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### Area of Audit:

<table>
<thead>
<tr>
<th>No.</th>
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### Non-Conformance With:

<table>
<thead>
<tr>
<th>Examples</th>
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<td></td>
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</table>

### Name and Signature of Auditor

<table>
<thead>
<tr>
<th>Name and Signature of Auditor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

### Company Corrective Action: Immediate, Short and/or Long Term

<table>
<thead>
<tr>
<th>Signature/Title</th>
<th>Date</th>
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</table>

### Civil Aviation Division Response

<p>| |</p>
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### Audit Follow up

<table>
<thead>
<tr>
<th>Target Completion Date</th>
<th>Date Item Completed</th>
<th>Inspector</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
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</table>
## Confirmation Request Form

<table>
<thead>
<tr>
<th>CRF No.</th>
<th>Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Auditor</th>
<th>Area of Audit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Company Representative</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Subject Matter

Auditor’s Signature

Date and Time

Company Response Required By: Date and Time

Company Response

Company Representative’s Signature

Date and Time

### For Inspector Use Only

- [ ] Company Response Accepted
- [ ] Company Response Rejected

Audit Finding: [ ] Yes [ ] No

Auditor’s Signature

Date and Time
Intentionally Left Blank
Chapter 17
Maintenance Training Program/Record

17.1. OBJECTIVE
This chapter provides guidance for evaluating and accepting an operator/applicant's maintenance/inspection training program.

17.2. GENERAL
Effective training is the basis for a successful maintenance/inspection program. Although many procedures for maintaining and inspecting aircraft may be similar, the equipment, procedures, and task documentation used may all be unique to the operator/applicant's specific programs.

A. State requirements normally require that maintenance/inspections be performed in accordance with the operator/applicant's manual.

B. Maintenance/inspection training programs are the most efficient manner to inform personnel of the requirements of the operator/applicant's program.

17.3. COORDINATION REQUIREMENTS AND SCHEDULING
Airworthiness Inspectors (AWIs) should encourage applicants to discuss pending maintenance/inspection training program development with the certification team before the program is submitted for final acceptance. It is especially important that programs be reviewed for conformity with appropriate regulatory requirements. This review can reduce the number of major changes an operator will have to make after a program has been printed and distributed.

17.4. SCHEDULING MAINTENANCE TRAINING PROGRAMS
Delays in program acceptance results in delays in the certification process. To facilitate the evaluation of the training programs, the applicant should be encouraged to schedule a classroom training session in a timely manner.

17.5. CONTENT OF MAINTENANCE/INSPECTION TRAINING PROGRAMS
The operator/applicant's training program should include company indoctrination and technical training (formal and on-the-job training). The program should contain a list of tasks to be taught and a method for recording the training. Completion of the training must be entered in the individual's training record.

A. Company Indoctrination: Each maintenance/inspection employee should receive instruction in the use of the operator/applicant's manuals, policies, procedures, and forms.

B. Maintenance/Inspection Technical Training
(1) Training may consist of a combination of formal (classroom) instruction and on the job training. The operator/applicant may give training credit to individuals for experience gained while employed by other operators.

(2) Procedures unique to the operator/applicant should be taught. Training records should indicate the amount of formal training, on the job training, and experience...
each individual receives.

(3) Technical training may be contracted to another operator, manufacturer, or in the case of a specialized process, to a person knowledgeable in that specialized process. The operator/applicant is responsible for the content and quality of such training.

(4) The authority normally does not establish a fixed amount of time for indoctrination or technical training courses, but should use a minimum time proportional to the operator/applicant's complexity.

C. Responsibilities for persons other than an Operator’s employees

State regulations normally require each certificate holder to be primarily responsible for having a training program and ensuring that the training received throughout the operator's system is of equal quality and effectiveness. This covers all persons such as the certificate holder’s employees, contract personnel for emergency maintenance and servicing, etc.

(a) each certificate holder or person who performs maintenance shall have a training program to ensure that each person, including inspection personnel, is fully informed about procedures, techniques, and new equipment in use and is competent to perform the applicable duties.

(b) no person may use any person to perform duplicate inspections unless the person performing the inspections is appropriately certificated, properly trained, qualified, and authorized to do so.

NOTE: A person can be defined as an individual, firm, partnership, corporation, company, association, joint stock association, or a governmental unit.

D. Category II/III Maintenance Personnel Training: Each applicant for Category II/III must establish an initial and recurrent training program. This program must be acceptable to the Administrator and cover all personnel performing quality control inspection and maintenance work on Category II/III airborne systems and equipment. Training records for such personnel are to be kept current and made available to the NAA for inspection.

E. Recurrent Training: The operator/applicant's training program should ensure that deficiencies discovered through continuous analysis and surveillance and/or reliability programs are corrected during recurrent training. Additionally, recurrent training should include at least the following:

* Review, reinforcement, and upgrading of all training given in both indoctrination and technical subjects

* Input from maintenance bulletins and/or maintenance newsletters

* Critical tasks, such as run-up/taxi, Duplicate Inspections, and Nondestructive Inspection (NDI)

F. Training Records: Training records must be retained by the operator/applicant to document that personnel are adequately trained. Training records should be maintained at a central location, but may be maintained at other locations provided these locations are listed in the operator/applicant’s manual.
G. Special Emphasis Training: Special maintenance/inspection training programs are required when new or different types of aircraft and/or equipment are introduced.

17.6 ACCEPTING THE MAINTENANCE/INSPECTION TRAINING PROGRAM

The task of acceptance differs from approval in that no specific procedure or vehicle is used to accept a training program. The program is approved by the general manager upon acceptance by the NAA. A list of effective pages will show acceptance date of the maintenance/inspection training program.

17.7. PROCEDURES

A. Review Operator File

B. Review Schedule of Events. If this task is performed as a part of an original certification, review the Schedule of Events to ensure that this task can be accomplished in accordance with the schedule.

C. Review Maintenance/ Training Programs. The program should include the following elements in the Maintenance Training Program:

1. The name of the person responsible for the overall administration of the maintenance program

2. The name(s) of the person(s) responsible for other processes within the maintenance training program (e.g., recordkeeping, revisions to training programs, and security of the program)

3. Designated maintenance training instructors

4. A description of how instructors are determined to be qualified

5. Procedures used to authorize instructors

6. A file on the instructors consisting of qualifications, authorizations, and other documents pertaining to instructor assignments

7. A list describing what type of training is required for new employees (Indoctrination, on-the-job training, etc.)

8. Procedures for evaluating, crediting, and documenting a new employee’s previous training

9. Procedures for determining what additional training is required for a new employee

10. A schedule for recurrent training, a description of recurrent training, and procedures for determining requirements for other training

11. Recordkeeping procedures, including records of the following:

* Training dates

* Who performed the training (instructor should indicate by signing)

* The number of hours of training performed

* The content of the training performed

12. Criteria for determining the quality of the training program (training standards)
(13) Evaluation of the need to revise training programs

(14) A training syllabus that describes the following:

* Content of each training course
* Format of training (classroom, on the job training)
* Duration of training courses
* Standards for grading students
* Training aids

(15) Criteria to determine acceptability of contract training, to include:

* Qualifications of instructors
* Criteria to establish appropriateness of reference material being taught
* Reporting procedures to inform operator of student progress
* Criteria to determine adequacy of facilities Criteria to evaluate contractor's training syllabus

D. Observe Operator/Applicant Performing Training. This observation is performed regardless of whether the operator performs the training or contracts with another company.

(1) Ensure that facilities are adequate, including classrooms, training aids, and reference materials.

(2) Evaluate the instructor's presentation and knowledge.

(3) Ensure that course content and instruction is in accordance with the training syllabus.

(4) Ensure that training recordkeeping is performed in accordance with maintenance/RIL inspection program.

F. Analyze Findings. Evaluate all deficiencies to determine what changes will be required.

G. Debrief the Operator/Applicant

(1) If deficiencies are discovered during the review, return the program to the operator/applicant with a letter describing the problem areas, if necessary. If this review is being performed as a part of a certification, inform the operator/applicant that issuance of the certificate will be withheld until deficiencies are corrected.

(2) Schedule a meeting with the operator/applicant to discuss the problem areas if it may be helpful in resolving deficiencies. Discuss how to resolve deficiencies.

7. TASK OUTCOMES

A. File Form

B. Successful completion of this task will result in the following:

* A letter to the operator/applicant indicating acceptance of the program
* The original accepted program sent to the operator/applicant along with instructions to provide a copy of the program to the RO.
Chapter 18
Approved Maintenance Organizations

18.1 BACKGROUND

A. Annex I, Chapter 4 contains the requirements for licensing of aircraft maintenance engineers (technician mechanics) including the related certification privileges. The chapter also makes provision for certification privileges to be vested in organizations approved by the national regulatory authorities of contracting states who are required to ensure that the associated certification standards will be no lower than those that would be achieved by the use of individually licensed personnel.

B. Taken together, Annex 6 Part I chapters 8 and 11 effectively place an obligation on operators to have systems of maintenance management and inspection, but provide no specific guidance on the preferred method of certifying the aircraft as fit for release to service after maintenance, i.e. by individually licensed personnel, or through certification privileges vested in an approved organization.

18.2. OVERVIEW OF THE CRITERIA ON WHICH APPROVAL OF MAINTENANCE ORGANIZATIONS IS BASED

A. Grant of approval

1) It is strongly recommended that approval be granted only to a whole organization headed by its Chief Executive Officer (CEO), who should be responsible to the airworthiness authority for ensuring that the terms and conditions of the approval are complied with. This approach provides a guarantee to the airworthiness authority that responsibility for corrective action for any deficiencies identified by the airworthiness authority is vested at the highest level in the organization’s management structure, thus ensuring that the necessary executive authority (including finance, where applicable) will be available. This might not be the case, for example, if the approval is vested only in the inspection department of an organization.

2) To support the CEO there should be a group of key personnel, nominated to the airworthiness authority, who are appropriately qualified and experienced to manage the various aspects of the activities included in the approval.

B. Systems of inspection and quality management

1) To satisfy the obligation of states under Annex 6, Part I, aircraft cannot be released to service following scheduled or unscheduled maintenance unless certifications are made by appropriately licensed/approved personnel that the tasks have been completed in accordance with the requirements of the State of Registry.

2) There are three generally accepted methods of meeting the requirement detailed in

a) use of licensed personnel; the individual either completes the task, or is responsible for its completion, and issues the necessary certification;

b) the task is completed by staff of a production department; a separate inspection department is responsible for the necessary certification; and
c) the staff of the production department are responsible for completion of the task to approved quality control standards and are qualified to issue the necessary certification; a separate quality assurance department completes sample audits to determine that the approved procedures are being adhered to and the final product is satisfactory. It is not uncommon to find various combinations of (i), (ii) and (iii) in organizations.

3) Of the three methods, some experts consider that (iii) is the optimum for the present generation of large transport aircraft. Before considering this topic further it is necessary, for the purposes of this chapter, to provide definitions of quality, quality control and quality assurance:

a) **Quality** of a product or service is the degree to which it meets the requirements of the customer, including the relevant airworthiness requirements;

b) **Quality Control** is a management system for programming and coordinating the ongoing quality and improvement efforts of the various groups in an organization to permit the completion of aircraft maintenance in accordance with the requirements of the airworthiness authority and any specific requirements of the organization or customer; and

c) **Quality Assurance** is the over-all authority for the supervision of quality standards, enabling these standards set by the system of quality control to be enforced.

4) In practical terms, it is very difficult to manage quality control in circumstances where completion of a task and determination of compliance with the associated quality requirements is the responsibility of separate persons (as in B. 2) (ii). The highest standard of quality of aircraft maintenance is very much dependent on the competence of the personnel who complete the tasks; it is not something that can be inspected-in. Thus responsibility for quality control management is best vested in a competent production work force that completes the tasks and is qualified to accept responsibility for certification of them, in accordance with prescribed procedures.

5) No system of quality management is complete without an element of quality assurance. This provides, through an independent audit system, the necessary feedback to the management of the approved organization to ensure that:

a) through product sampling, the requirements of the customer, including those related to airworthiness, are being satisfied;

b) the procedures of the organization are being complied with and that they remain appropriate for the undertakings of the organization; and

c) the organization remains in compliance with the requirements and conditions of the approval granted by the airworthiness authority.

6) Further guidance material on quality management is provided in 27.3.

C. The purpose of the maintenance manual

1) Operators are required to provide a maintenance manual, as outlined in 1.3 of this chapter. Interpreted literally, the requirement applies only to an operator; states are encouraged to apply the principle of this requirement to any approved maintenance organization, whether an integral part of an operator or not.
2) The purpose of the manual for an approved maintenance organization is threefold:
   a) to provide to the personnel the necessary information to enable them to
      fulfill their various roles in complying with the terms and conditions of the
      approval and the relevant airworthiness requirements;
   b) to provide airworthiness management for the maintenance activities
      undertaken by the organization; and
   c) to substantiate to the airworthiness authority how the activities included in
      the approval - and the relevant airworthiness requirements will be satisfied.

3) It is recommended that the airworthiness authority should consider the provision of
   this manual as an integral part of the approval of the organization; subsequent
   amendments to the manual should also be approved by the airworthiness
   authority, either directly or by a delegation process.

4) In the case of large organizations, it may be more appropriate for the manual to be
   divided into two or more volumes. The first volume would contain the essential
   requirements for management of the approval and compliance with the appropriate
   airworthiness requirements, including the control of the contents of the other
   volumes. It is then usual for the airworthiness authority to limit its direct approval to
   the contents of the first volume.

5) Further guidance on maintenance manuals is provided in 27.4.

D. Human resources

1) The organization should employ sufficient personnel to plan, perform, supervise and
   inspect the activities included in the approval. Organizations engaged in aircraft
   maintenance for commercial reasons are under constant pressure to achieve
   maximum work throughout. It is important to determine that such organizations
   have the necessary human resources to match the anticipated workload without any
   reduction in the standards accepted by the airworthiness authority in the granting of
   the approval.

2) There are no Standards or Recommended Practices which relate to personnel
   employed in aircraft maintenance other than those which relate to certifying staff. Nevertheless, it is important to realize that aircraft maintenance is an integrated
   activity, involving technical records, planning, supervision, quality control and/or
   quality assurance personnel, mechanics and specialist technicians, e.g. non-
   destructive test personnel. Procedures should exist to ensure that these persons are
   assessed for competence in relation to their particular role within the organization.

E. Training policy

1) Air transport is an industry which, more than most has to adapt to technology which
   is in a constant state of development. Training provided to personnel engaged in aircraft
   maintenance needs to mirror this state of change; consideration needs to be given to
   requirements for refresher/continuation training as well as initial training in the approval
   of organizations.
2) The only relevant Standards are in Annex 6, Part I, (aeroplanes) and Part III, 6.3 (helicopters) which require that: “An operator shall ensure that all maintenance personnel are instructed regarding the maintenance methods to be employed, in particular when new or unfamiliar equipment is introduced into service.”

3) It is strongly recommended that policies for initial and refresher training are considered in the assessment for approval by the airworthiness authority. Consideration should be given to the needs of mechanics, quality-control and/or quality-assurance personnel, supervisors, planners and technical records personnel as well as those persons certifying aircraft as fit for release into service.

4) It is important to note that training should not be limited to providing knowledge of the products which are maintained by the organization. There is a need to ensure all personnel are given training on the company procedures associated with the approval. Where the organization utilizes specialized techniques, e.g. non-destructive inspection or novel methods of repair, appropriate training should be provided.

F. Qualification of certifying personnel

1) As explained in 1.1, ICAO requirements for the licensing of personnel engaged in aircraft maintenance and the acceptability of approved maintenance organizations are provided in Annex I. In relation to approved maintenance organizations, there are no Standards or Recommended Practices on the qualification of certifying personnel employed by the organization. Airworthiness authorities should give particular attention to this point in their national requirements for approval of maintenance organizations; for airworthiness authorities that issue aircraft maintenance engineer (technician mechanic) licences, possession of an appropriate licence demonstrates a level of knowledge and experience which may be appropriate as a basic qualification for certifying personnel.

2) For airworthiness authorities who do not issue licences, it is important to ensure that proper procedures and training exist for qualification of the persons who will be making certifications in respect of the release of aircraft to service.

3) All certifying personnel should be familiar with the relevant company systems and procedures, as well as having appropriate knowledge of the aircraft component being maintained. It is important that compliance with this requirement is determined before a certifying authorization is granted.

G. Facility requirements

1) Facilities, including access equipment, should be available appropriate to the planned work, including, in particular, protection from adverse weather conditions. Specialized workshops should be segregated to ensure that environmental or work area contamination is unlikely to occur. Aircraft maintenance is documentary intensive; adequate office facilities should be available for personnel engaged in the management of quality, planning and technical records.

2) Storage facilities should be provided for parts, equipment, tools and material. Storage conditions should be such that unauthorized access to serviceable parts is prevented and that there is complete segregation of serviceable and unserviceable parts.
H. Equipment, tools, material, airworthiness and maintenance data

1) Equipment, tools, material, airworthiness and maintenance data should be available for completion of the scope of activities included in the approval granted by the airworthiness authority. For maintenance organizations who are not themselves aircraft operators, it is not uncommon for an organization to expect some specialized equipment, tools and data in respect of a particular variant of an aircraft type to be provided by the operator. An airworthiness authority which accepts an arrangement of this nature should ensure that the activity is controlled by proper contractual arrangement between the maintenance organization and the operator.

2) Much of the tooling and equipment associated with aircraft maintenance is subject to periodic calibration. The calibration procedures should be acceptable to the airworthiness authority and the actual standards themselves traceable to international standards acceptable to the state concerned.

I. Contract and sub-contract

It is an accepted practice for operators to contract their maintenance requirements to approved maintenance organizations. Similarly, it is an accepted practice to permit approved organizations to sub-contract work to organizations which are either not approved by the airworthiness authority or not approved by the airworthiness authority for the activities under consideration. In the acceptance of this practice, consideration should be given to the following points:

a) the approved organization must be approved for the work which is to be sub-contracted and have the capability to assess the competence of the sub-contractor;

b) the approved organization must retain responsibility for quality control and release of sub-contracted activities, including the appropriate airworthiness requirements; and

c) the existence of the necessary procedures for the control of sub-contracted activities, together with terms of reference for the personnel responsible for their management.

18.4 QUALITY MANAGEMENT

A. General

1) In recognition of the key importance of this activity in continuing airworthiness, it is essential for the manager of the quality department to have direct access to the CEO on quality issues.

2) The maintenance organization’s systems for quality control and assurance should take into account all of the facilities and procedures utilized to ensure continuing airworthiness where activities take place affecting the airworthiness of the aircraft and product quality for subjects not directly related to airworthiness.

3) Quality Control should therefore be effective throughout the maintenance of aircraft and quality auditing should ensure that control is being properly applied and achieving satisfactory results.

4) The organization’s quality control policies and systems should be described in the maintenance manual, together with the quality assurance audit programme in respect of product, facility and procedures.
PROCEDURES AND PERSONNEL QUALIFICATIONS

1) Staff assigned to quality control and assurance duties should be:
   a) sufficiently experienced in the company systems and procedures and technically knowledgeable of the aircraft being maintained so as to enable them to perform their duties satisfactorily;
   b) experienced in the techniques of quality control and assurance or receive suitable training before taking up their duties; and
   c) given clearly defined terms of reference and responsibility within the organization and reporting lines to senior management.

Note: This is particularly important where quality personnel are also expected to perform other duties in the organization, e.g. to issue maintenance releases after the completion of base maintenance.

2) The department responsible for quality control and assurance should arrange for independent quality audit checks to be carried out in accordance with the audit programme. Emphasis should be placed on the company systems employed to achieve and ensure airworthiness, their suitability and effectiveness. The scope of quality checks within the organization should be based on the guidelines given in Chapter 17 of The Inspector Handbook.

3) All quality checks should be recorded and assessed and any criticisms forwarded to the person responsible for the particular facility or procedure for corrective action to be taken. There should be a feedback system for confirming to the quality assurance staff that corrective action has been taken and to ensure that persons concerned with any audit deficiency are kept aware of both the adverse report and the outcome.

18.5 ORGANIZATION’S MANUAL

1) The organization’s manual should provide clear guidance to personnel on how the activities included in the airworthiness authority approval are managed, their personal responsibilities and how compliance with the appropriate continuing airworthiness requirements is achieved. It should also include a statement of the organization’s policies and objectives. If this manual is used also to comply with the maintenance manual requirements of Annex 6, Part I, the aeroplane maintenance programme should be included.

2) Consideration should be given to the following topics:
   a) need for a statement signed by the CEO confirming that the manual defines the organization’s procedures and associated personnel responsibilities and will be complied with at all times;
   b) details of key personnel specifically nominated to the airworthiness authority:
      1. a senior person, or group of persons, whose functions will include responsibility for the co-ordination of all appropriate departments so as to ensure compliance with the relevant airworthiness requirements. It is recommended that this person or group should be directly responsible to the CEO;
2. heads of departments and such other senior and specialist staff as are appropriate to the activities encompassed by the approval; and

3. personnel approved to authorize signatories for the maintenance releases specified in Annex 6, Part I, Chapter 8;

c) the terms of reference of the persons nominated in accordance with b), as applicable to the activities covered by the approval. The specific subjects on which these persons are authorized to deal direct with the airworthiness authority should be defined within the terms of reference;

d) an organization chart showing the associated chains of responsibility of the persons nominated in accordance with (ii);

e) the scope of the facilities for the maintenance of aircraft, together with information on the availability of equipment essential for, and/or peculiar to, the type(s) for which approval is sought;

f) details of the systems and procedures for the control of matters, including quality control, directly affecting continuing airworthiness. Guidance on systems and procedures which need to be considered is provided in Chapter of this manual;

g) details of training programmes appropriate to the approval, together with details of the training facilities which will be used; and

h) Liaison and/or contractual arrangements with other organizations which provide services associated with the approval.
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Chapter 19

19.1 OBJECTIVE

This chapter provides guidance for evaluating an operator's Maintenance Control Manual/ Engineering Procedure Manual or revision to ensure that policies, procedures, and technical criteria meet state regulatory requirements laid down in NCAR chapter E.2.

ICAO Annex 6, Chapter 11 states that: A maintenance manual provided in accordance with chapter 8 shall contain the following information in respect of the aeroplanes operated:

a) procedures for servicing and maintenance;

b) an aeroplane maintenance programme, approved by the State of Registry, containing maintenance tasks and intervals at which these tasks are to be performed;

c) the responsibilities of the various classes of skilled maintenance personnel;

d) the servicing and maintenance methods which may be prescribed by, or which require the prior approval of, the State of Registry; and

e) the procedure for preparing the maintenance release, the circumstances under which this release is to be issued and the personnel required to sign it.

19.2. GENERAL

A. A company manual should enable the operator's maintenance and servicing personnel to carry out their duties at a high level of safety. The complexity of the manual will vary with the complexity of the operation. The manual should cover specific items in accordance with the (Applicable State Regulations), but may include additional items at the discretion of the applicant. A manual is therefore accepted rather than approved.

B. Manual acceptance can be a cause of delay in the certification process.

(1) If the operator/applicant does not have experienced and qualified personnel to prepare an acceptable manual, the use of a consultant may be appropriate. A consultant can be used in an advisory position only.

(2) After the review, the manual should be returned to the operator/applicant with a list of any discrepancies found. The operator/applicant should be informed that final certification will not be completed until discrepancies are corrected. Inspectors should be concerned primarily with ensuring regulatory compliance.

19.3 REVIEWING OPERATOR/APPLICANT'S MANUAL

A. The manual is an administrative tool used to control and direct personnel. It should define all aspects of the maintenance operation.
(1) The policies and procedures section should address organizational matters.

(2) The maintenance section should address policies and procedures for administering the inspection and maintenance requirements, test flight requirements, and other subjects, as applicable.

B. The manual should include detailed instructions or specific references for accomplishing inspection and maintenance functions. It should also include forms, instructions, and references for recurring non routine requirements such as engine changes and inspections following abnormal occurrences (hard landings, lightning strikes, severe turbulence, high brake energy stops, etc.).

C. Manufacturers' technical manuals provide instructions for accomplishing specific tasks. These documents also establish methods, technical standards, measurements, and operational test procedures. The policy and procedures section of the operator's manual should describe areas of application for the pertinent technical documents.

D. The following are examples of manual sections and titles. The list which follows is not exhaustive, but includes the principal topics which need to be considered for inclusion as procedures in the manual. The operator should not be required to follow the order laid out below however all topics listed below should be included in his manual. If this manual is used also to comply with the maintenance manual requirements of Annex 6, Part I, Chapter 11 which states that the manual shall contain: an aeroplane maintenance programme, approved by the State of Registry, containing maintenance tasks and intervals at which these tasks are to be performed; the aeroplane maintenance programme should be included.

(a) For CAMO:

Part 0 General organization
0.1 Corporate commitment by the accountable manager
0.2 General information.
0.3 Management personnel.
0.4 Management organisation chart.
0.5 Notification procedure to the CAAN regarding changes of the organization management Organisation's activities / approval / location / personnel.
0.6 Exposition amendment procedures.

Part 1 Continuing Airworthiness management procedures
1.1 Aircraft technical log utilization and MEL application (commercial air transport). Aircraft continuing airworthiness record system utilization (non commercial air transport).
1.2 Aircraft maintenance programmes – development amendment and approval.
1.3 Time and continuing airworthiness records, responsibilities, retention, access.
1.4 Accomplishment and control of airworthiness directives.
1.5 Analysis of the effectiveness of the maintenance programme(s).
1.6 Non mandatory modification embodiment policy.
1.7 Major modification standards.
1.8 Defect reports.
1.9 Engineering activity.
1.10 Reliability programmes.
1.11 Pre-flight inspections.
1.12 Aircraft weighing.
1.13 Check flight procedures.

Part 2 Quality system
2.1 Continuing airworthiness quality policy, plan and audits procedure.
2.2 Monitoring of continuing airworthiness management activities.
2.3 Monitoring of the effectiveness of the maintenance programme(s).
2.4 Monitoring that all maintenance is carried out by an appropriate maintenance Organisation
2.5 Monitoring that all contracted maintenance is carried out in accordance with the contract, including sub-contractors used by the maintenance contractor.
2.6 Quality audit personnel.

Part 3 Contracted Maintenance
3.1 Maintenance contractor selection procedure.
3.2 Quality audit of aircraft.

Part 4 Airworthiness review procedures
4.1 Airworthiness review staff.
4.2 Review of aircraft records.
4.3 Physical survey.
4.4 Additional procedures for recommendations to CAAN for the import of aircraft
4.5 Recommendations to CAAN for the issue of ARC.
4.6 Issuance of ARC.
4.7 Airworthiness review records, responsibilities, retention and access.

Part 5 Appendices
5.1 Sample documents.
5.2 List of airworthiness review staff.
5.3 List of sub-contractors as per AMC M.A.201 (h)2 and M.A.711 (a) 3.
5.4 List of approved maintenance organisations contracted.
5.5 Copy of contracts for sub-contracted work (appendix 2 to AMC M.A.201 (h) 2.
5.6 Copy of contracts with approved maintenance organisations.

(b) For AMO:

Part I - Management
1.1 Corporate commitment by the accountable manager
1.2 Background Description of the organisation
1.3 Management Organisation Chart
1.4 Duties and responsibilities of management personnel
1.5 Training Policy
1.6 List of certifying staff
1.7 General description of facilities at each approved location
1.8 Scope of work under the approval
1.9 Notification procedures to the airworthiness authority regarding changes to the organization’s activities/approval/location/personnel.
1.10 Amendment procedures for the manual

Part 2 - Maintenance Procedures
2.1 Supplier evaluation procedure.
2.2 Acceptance/inspection of aircraft components and material from outside contractors.
2.3 Storage, labeling/tagging and release of aircraft components and material to aircraft maintenance.
2.4 Return of defective aircraft components to store.
2.5 Control of defective components sent to outside contractors for overhaul, etc.
2.6 Sub-contract procedures
2.7 Acceptance of tools and equipment.
2.8 Calibration of tools and equipment.
2.9 Use of tooling and equipment by staff (including alternate tools).
2.10 Cleanliness standards of maintenance facilities.
2.11 Technical Maintenance Data for aircraft/aircraft components including manufacturers service information and updating and availability to staff.
2.12 Airworthiness directives procedure
2.13 SB/Optional modification procedure.
2.14 Repair procedure.
2.15 Weight & balance control
2.16 Procedures for compliance with an operator’s aircraft maintenance programme
2.17 Maintenance documentation in use and completion of same.
2.18 Technical record control.
2.19 Records for the operator (if the organization is not an operator itself).
2.20 Control of computer maintenance record systems
2.21 Rectification of defects arising during base maintenance.

2.22 Release to service procedures to include:
   a) issue of the maintenance release required by Annex 6, Part 1, chapter 8;
   b) certification as airworthy after overhaul, component replacement, inspection, modification or repair.

2.23 Reporting of defects and other occurrences as required by the airworthiness authority.

2.24 MEL revision and control of MEL

Part 3 - Line Maintenance Procedures (when applicable)

3.1 Line maintenance control of aircraft components tools, equipment, etc.
3.2 Line maintenance procedures related to servicing/fuelling/de-icing. etc.
3.3 Line maintenance control of MEL, defects and repetitive defects.
3.4 Line procedure for pooled parts and loan parts.
3.5 Line procedure for return of defective parts removed from aircraft.
3.6 Reference to specific maintenance procedures such as:
   - engine running procedures;
   - aircraft pressure run procedures;
   - aircraft towing procedures;
   - aircraft taxiing procedures

Part 4 - Quality System Procedures

4.1 Quality audit of organization procedures.
4.2 Quality audit of aircraft.
4.3 Quality audit remedial action procedure.
4.4 Analyzing the effectiveness of the Maintenance program
4.5 Reliability program
4.6 The qualification and training procedures for personnel issuing certifications in respect of airworthiness after overhaul, etc., and for release to service (“certifying staff”)
4.7 Records of certifying staff
4.8 The qualification and training procedures for quality audit personnel
4.9 The qualification and training procedures for mechanics
4.10 Exemption process control
4.11 Concession control or deviation from organization’s procedure

4.12 Qualification procedure for specialized activities such as non-destructive testing (NDT), welding.

4.13 Control of manufacturer’s working teams based at the premises of the organization, engaged in tasks which interface with activities included in the approval

4.14 Quality audit of sub-contractors (or acceptance of accreditation by third parties, e.g. use of NDT organizations approved by a State regulatory body other than the airworthiness authority).

Part 5 - Examples of standard documents used by the organization

(c) For Existing Operators without NCAR Part 145 or NCAR Part M approval

An Operator's Maintenance Control Manual or Maintenance Procedure Manual shall contain:

i. Procedures to ensure that work interruptions do not adversely affect required inspections.

ii. A general description of the organization's facilities.

iii. A general description of the scope of work authorized, under the organization's terms of approval.

iv. Details of maintenance program to be followed, including procedures for ensuring that all maintenance is performed when required or for obtaining an approved concession in exceptional circumstances.

v. Methods used for designating critical items requiring inspections.

vi. Procedures for the recording and certification of maintenance including the use of Technical (Flight) Logs and Aircraft, Engine and Propeller Log Books. A description of the method used for the completion and retention of the maintenance records.

vii. Procedures to ensure that required maintenance or inspections are handled by appropriately trained, qualified and certificated/licensed personnel.


ix. Procedures to ensure that inspections are completed satisfactorily before aircraft are released to service.

x. Identification of the aircraft types operated and/or maintained and the approved Maintenance Schedule for each type. Procedures for control and amendment of Maintenance Schedules.

Note: For preference the Maintenance Schedule for each aircraft type should be included in the manual.
xi. A description of the organization's maintenance procedures and quality assurance systems of inspection. Details of any reliability and quality assurance or quality control program operated by the Engineering Department.

xii. Procedures for control of items subject to maintenance On Condition, Condition Monitoring, fixed time overhaul lives (TBOs) or retirement lives, and, if applicable, approved escalation programs.

xiii. A description of procedures whereby information on faults, malfunctions, defects and other occurrences which cause or might cause adverse effect on the continuing airworthiness of the aircraft is transmitted to the aircraft manufacturer and to the Director General. The approved Minimum Equipment List for each aircraft type.

xiv. Provision for unscheduled maintenance and rectification of defects when aircraft are away from base.

xv. Procedures for receiving, assessing, amending and distributing within the maintenance organization all the necessary airworthiness data from the type certificate holder or type design organization including the implementation of applicable Airworthiness Directives and manufacturers' Service Bulletins.

xvi. Procedures for control and amendment of Nepalese Civil Airworthiness Requirements, Flight Standards Notices, Manufacturers' Manuals, Flight Manuals and for the issue of drawings, specifications, work sheets and mandatory instructions.

xvii. Procedures for control of stores, including incoming goods inspection and shelf life control.

xviii. Procedures for swinging compasses, weighing aircraft, ground running, etc.

xix. Procedures for ensuring periodic calibration of precision tools and test equipment.

xx. Procedures for designing and obtaining approval of modification and repair designs originated by the maintenance organization.

xxi. Procedures for control of special processes, e.g. anodizing, welding, heat treatment, non-destructive testing, tests of safety equipment, etc.

xxii. Procedures for contracting out maintenance to foreign organizations, the system for issuing directives on quality standards to be observed by such organizations, and the procedure for inspecting and accepting work completed by such organizations.

xxiii. Identification of forms used for recording and certification of maintenance. Specimens of such forms should be included in the manual.

xxiv. A statement signed by the CEO confirming that the manual defines the organization's procedures and associated personnel responsibilities and will be complied with at all times. An organization chart showing the chain of responsibility for maintenance management and quality assurance (control).
Key personnel shall be identified by name and their responsibilities be defined by individual job descriptions.

xxv. A definition of the duties and responsibilities of each section or workshop of the Engineering Department. Instructions regarding communication between sections, and procedures when passing work from one shift to the next.

E. Manuals should be easy to revise and should show the date of last revision on each page. The manuals must have a page control system showing the number of pages and including the latest revision. The page control system is usually identified as a list of effective pages.

F. The operator/applicant is responsible for ensuring that manuals present adequate guidance to meet all regulatory requirements. The operator/applicant must understand and accept this responsibility early in the certification process.

G. An (Airworthiness Inspector (AWI)) may, when necessary, formally request revision to any part of the maintenance manual when such revision is in the interest of safety, or when the manual does not meet regulatory requirements. An airworthiness inspector (AWI) also may formally request revision to any part of the maintenance manual when such revision is in the interest of safety, or when the manual does not meet the requirements of the applicable NAA. This authority should be used only when the need for revisions is adequately substantiated by safety considerations or by the appropriate state regulatory requirements and when informal discussions with the operator fail to accomplish the necessary revision.

19.4 EVALUATE MANUAL CONTENTS

GENERAL

The following paragraphs expands the summary of manual contents as listed in paragraph 19.3 D.

The manual should contain:

A. Definitions. Any terms contained in the manual that are unique to the operator’s operation must be defined.

B. Manual revision and distribution procedures. The certificate holder’s manual must describe the revision control procedures and how the distribution of manuals will be controlled.

1) Manuals must be easy to revise and have the date of last revision on each page. The manuals must have a page control system that shows the number of pages and ensures that the latest revision is included. The page control system is usually identified as a list of effective.

2) Manuals must have a distribution system that ensures that all applicable staff has a copy, or have ready access to the manual and incorporate amendments into it.
when issued. Manuals issued in media other than paper must be supplied with appropriate reading equipment

C. Copies of operations specifications (or similar document such as Scope of Approval) are normally included in the manual. The operator may decide, however, to insert pertinent excerpts from these documents.

D. References to appropriate Civil Aviation Regulations are required to be in the manual.

19.5 MANAGEMENT ORGANIZATION

The manual should contain;

A. A chart or description of the certificate holder’s organization. The organizational chart must describe, at a minimum, the management personnel and major functions. However, it is recommended that the chart cover the operator’s entire organization.

B. The duties responsibilities and authority of management and inspection personnel.

C. A general description of the facilities at every approved location.

D. Scope of work authorized by the NAA.

E. A list of Contract Organizations. This list should include organizations with whom the certificate holder has arranged to perform any of its maintenance, including a general description of the work and how quality is monitored.

19.6 MAINTENANCE PROCEDURES

The manual should contain:

A. Procedures that should be followed while performing any maintenance of the certificate holder’s aircraft, including airframes, aircraft engines, propellers, rotors, components, and emergency equipment. These procedures should ensure that:

   (a) All maintenance is performed in accordance with the method described in the certificate holder’s manual.

   (b) Competent personnel, adequate facilities, and equipment are provided for accomplishing maintenance.

   (c) Each aircraft released to service is airworthy and properly maintained.

   (d) Those items of maintenance that must be inspected are designated. The designations should include at least those items which, if maintenance is not performed properly or if improper parts or materials are used, could result in a failure, malfunction, or defect endangering the safe operation of the aircraft.

   (e) Methods of performing required inspections and the occupational title(s) of persons authorized to perform each required inspection are in the manual.

   (f) Procedures are included for re-inspecting the work performed under previous inspection findings (rejected item procedures).

   (g) Procedures are included which state the standards and limits for the acceptance or rejection of inspected items.
(h) Instructions are included to prevent any person who performs work on any item from performing the duplicate or required inspection of that work.

(i) Procedures are included to ensure that all required inspections are performed.

(j) Procedures are included to ensure that any maintenance not completed, as a result of employee shift changes or similar work interruptions, are properly completed before the aircraft is released to service.

(k) Instructions and procedures for all maintenance are included.

(l) A list of required maintenance related forms and the requirements for preparation.

19.7 RECORD KEEPING

Time limitations or standards for determining time limitations for overhauls, inspections, and checks of airframes, engines, propellers, appliances, and emergency equipment are included.

A suitable system, which may include a coded system, providing for preservation and retrieval of information in a manner acceptable to the Director and which provides:

- A description of the work performed or reference to data acceptable to the Director
- The name of the person performing the work if the work is performed by a person outside the organization of the certificate holder
- The name or other positive identification of the individual approving the work

A computerized record keeping system must have back-up and security procedures acceptable to the NAA. (Refer to Chapter 26 of this manual).

19.8 CONTROL & CALIBRATION OF PRECISION TOOLS

Procedures, standards, and limits necessary for periodic inspection and calibration of precision tools, measuring devices, and test equipment shall be included in the manual. The manual shall include details of the following:

- Recording system
- Method of identifying calibrated items
- Method of identifying calibration due dates
- Calibration intervals
- Calibration standards
- The person responsible for carrying out the calibrations, and
- The responsibilities of all staff in ensuring that only calibrated tools are used during maintenance which requires the use of calibrated tools.

Procedures for ordering accepting and control of specialized tooling required for the maintenance of aircraft and components.
19.9 FUELING

Procedures for aircraft refueling, and defueling including:

- elimination of fuel contamination and checking procedures
- fire protection (including electrostatic protection)
- supervision and protection of passengers during refueling

19.10 TRAINING

The manual should include training programs to ensure that each person who performs, supervises, or certifies maintenance is competent and is fully informed about procedures, techniques, and new equipment in use.

Training programs should include:

* Program description
* Maintenance refresher training on current aircraft and equipment
* Frequency of training
* New equipment training
* Inspection procedures & techniques for maintenance and inspection staff

19.11 MAINTENANCE LOG

The manual should provide procedures for the reporting and correction of mechanical irregularities in the maintenance log and elsewhere. These procedures should address the following:

(a) The recording of defects and irregularities in the aircraft maintenance
(b) The method of ensuring that the aircraft maintenance log is readily accessible to each flight crew member
(d) Placarding those items declared to be MEL items.
(e) Deferred maintenance

19.12 MAINTENANCE RELEASE

A. The manual must provide maintenance release procedures, and procedures for making maintenance record entries in the aircraft log. The procedures shall include a certification that:

- Work was performed in accordance with the requirements of the manual
- All items required to be inspected were inspected
- No known condition exists that would make the airplane unairworthy
- So far as the work performed is concerned, the airplane is in condition for safe operation

NOTE: Rather than restate the above requirements each time a maintenance release is executed, the operator/applicant may provide a statement in the manual that the signature of a properly authorized
B. The manual shall also include:
   a) The qualifications and authorization of persons authorized to issue maintenance release
   b) Definition of when a maintenance release is required
   c) The form and manner in which a maintenance release will be documented
   d) Provision of a copy to the pilot in command

19.13 APPROVED PARTS PROCEDURES
A. The manual must provide procedures to ensure that approved parts and materials are used, including:

   Evaluation of suppliers
   Dispatch of components to outside repair agencies – ensuring required maintenance is described & carried out.
   • Receiving inspection, including acceptable incoming documents and records control.
   • Shelf time control
   • Preservation of parts
   • Parts identification system
   • Disposition of failed/scrap/surplus parts
   • Parts robbing and swap
   • Parts pooling/borrowing

19.14 TECHNICAL SERVICES
The manual must provide modification and repair procedures which shall ensure that:
All Airworthiness directives are actioned in a timely manner,
All manufacturers optional service bulletins and other service information is evaluated and appropriate action taken,
All damage is repaired in accordance with approved data.
Any modification is carried out in accordance with approved data.

19.15 TECHNICAL PUBLICATIONS
The manual must provide procedures which will ensure that all technical publications used for maintenance are up to date, controlled, and are available to applicable staff.
19.16 WEIGHT AND BALANCE CONTROL

Methods and procedures for maintaining the aircraft’s weight and center of gravity within approved limits are included.

19.17 OPERATOR’S CONTINUING ANALYSIS AND AUDITING PROGRAM

The manual must provide the specifics of the operator’s continuing analysis and surveillance program, including:

- Quality audit of organization procedures.
- Quality audit of aircraft.
- Quality audit remedial action procedure.
- The qualification and training procedures for personnel issuing certifications in respect of airworthiness after overhaul, etc., and for release to service ("certifying staff").
- Records of certifying staff.
- The qualification and training procedures for quality audit personnel.
- The qualification and training procedures for mechanics.
- Concession control for deviation from organization's procedures.
- Qualification procedure for specialized activities such as non-destructive testing (NDT), welding, etc.
- Control of manufacturer's working teams based at the premises of the organization, engaged in tasks which interface with activities included in the approval.
- Quality audit of sub-contractors (or acceptance of accreditation by third parties, e.g. use of NDT)
- Organizations approved by a State regulatory body other than the airworthiness authority.
- Mechanical performance and Reliability programs.

19.18 TEST AND FERRY FLIGHTS

The manual shall contain:

A. Test flight requirements and limitations are required to be in the manual. These include:
   - Items requiring test flight
   - Procedures for performing test flight

B. Ferry flight limitations and procedures.
19.19 MANDATORY REPORTING
The manual should provide the following reporting procedures:

Reporting the occurrence or detection of each failure, malfunction or defect of mechanical reliability

Reporting each interruption to a flight, unscheduled change of aircraft enroute, or unscheduled stop or diversion from a route caused by known or suspected mechanical

Submitting required aircraft and engine utilization reports to the CAA

Ensuring that all major alteration reports are submitted to the CAA

Ensuring that reports of major repairs are prepared and retained by the operator (these may be in the form of engineering orders, if the operator/applicant is so structured)

19.20 LINE MAINTENANCE PROCEDURES
The manual should also contain other procedures, including:

- Parking aircraft in high winds
- Short term storage
- Long term storage
- Seasonal operation
- Removing ice and snow from aircraft
- Towing
- Emergency procedures
- Run up/taxi personnel authorizations
- Aircraft ground run up
- Taxiing aircraft
- Ramp signals and procedures
- Jacking, lifting, and hoisting
- Use of landing gear downlocks
- Use of external gust locks
- Aircraft cleaning, including materials used for cleaning and flame proofing materials after dry cleaning
- Engine change
- Propeller change
- Cylinder change
• Engine and propeller overspeed
• High oil consumption
• Oil leaks
• Engine and propeller troubleshooting
• Oxygen and nitrogen servicing and storage

19.21 CAT II OR III OPERATIONS & ETOPS
The manual should include additional maintenance for Category II or Category III operations and ETOPS, if applicable.

19.22 APPROVAL PROCEDURE
19.22.1 Check for the application made by authorized personnel, normally Engineering Director, CAMO Manager or equivalent post holder.
19.22.2 Ensure that Operators engineering control manual is complete in all respects, i.e. contains all the necessary details laid down in NCAR Chapter E.2.
19.22.4 If found satisfactory initiate an internal office memo to superior officer along with a copy of manual and completed checklist.
19.22.5 After approval from Director General, send one signed copy to the applicant and retain the other copy at library.
Chapter 20
Aircraft Fueling

20.1 BACKGROUND

Improper fueling procedures may cause aircraft accidents. If operators of fueling facilities establish procedures for safe and proper fueling of aircraft and fueling personnel follow these procedures, many aircraft accidents or incidents will be prevented. Fueling personnel should be familiar with the fuel requirements for the models and types of aircraft they are servicing. This chapter contains a description of fuel contamination and other problems that may be encountered in fueling aircraft and recommended procedures for combating these problems.

20.2 GENERAL

A. An operator must have procedures for handling and dispensing fuels. The following must be included as components of the operator’s procedure manual:

- Dispensing equipment procedures
- Electrostatic protection procedures
- Contamination protection procedures
- Related record keeping procedures

B. The operator’s manuals must include procedures for vendors and contractors. A states aviation regulations may not establish standards for fueling facilities, but this does not relieve the operator of overall responsibility for conducting those operations within established industry standards

20.2 FUELS

A. AVIATION GASOLINE

The naming system for the grades of aviation gasoline is derived from the general term “AVGAS,” a widely used abbreviation of the words “aviation gasoline”, followed by the grade marking. The grades are identified by their performance numbers, as recognized by all military and commercial specifications, e.g., 80, 100LL, and 100.

1. The naming system for AVGAS grades is printed on all containers in white letters and numbers on a red background.

2. Storage containers are also marked with a circular band around the piping, the color of which matches the dye in the AVGAS flowing through the line. The dyes are red for AVGAS 80, blue for AVGAS 100LL, and green for AVGAS 100. A minimum 4 inch wide band is recommended. If the pipeline is painted the color of the AVGAS, then no banding is needed.

B. JET FUELS

The three classifications of aviation turbine fuels are universally referred to as “jet fuels”.

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(1) The naming system for the jet fuel is printed on all containers in white letters on a black background to distinguish it from aviation gasoline.

(2) Examples of jet fuel storage container markings include the following:
   - Jet A fuel containers marked with a single 4-inch wide (minimum) black band around the piping
   - Jet A-1 fuel containers marked with two 4-inch wide (minimum) black bands
   - Jet B-1 fuel containers marked with three 4-inch wide (minimum) yellow bands

20.3 Fuel Contamination

A. Water in the Fuel
(1) Water occurs in aviation fuels in three forms:
   (a) Dissolved water occurs similar to the humidity in the atmosphere that converts to droplets and settles out as the fuel temperature decreases during flight.
   (b) Suspended water appears in the form of droplets that reflect light. High concentration of droplets will cause fuel to have a cloudy or hazy appearance.
   (c) Solid bodies of water may be caused by leakage of storage tanks, leaking filler neck seals, or the settling out of suspended water droplets.

(2) Accumulation of water: There is no way of preventing the accumulation of water formed through condensation in fuel tanks. The accumulation is certain, and the rate of accumulation will vary; so it is recommended that storage tanks, fuel truck tanks, and aircraft fuel tanks be checked DAILY for the presence of water. Any water discovered should be REMOVED immediately. In addition to the daily water check, fuel tanks should be CHECKED AFTER EACH DELIVERY as insurance against inadvertent water contamination.

(3) The minimum settling time: Adequate settling time is NECESSARY for accurate testing. The minimum settling time for aviation gas is 15 minutes per foot-depth of fuel and 60 minutes per foot-depth of turbine fuel.

(4) Water checks of storage tanks and fuel trucks may be made by attaching water detecting paste, or litmus paper, to the bottom of the tank dip stick.
   (a) Push the dip stick to the bottom of the tank and hold for 30 seconds. When the stick is removed, the detecting paste or litmus paper will have changed color if water is present.
   (b) The source of excessive amounts of water must be determined and corrected before further use of fuel from the tank.

B. RUST AND SCALE

A. Rust and scale dislodged from the inside of fuel storage tanks may enter the aircraft fuel tanks and clog systems. Turbine fuel tends to dislodge rust and scale and carry the particles in suspension. Because of this, fuel dispensing equipment filters should
be serviced frequently. Aviation gasoline should not be stored in tanks or equipment that has been used for turbine fuel storage.

C. MICRO-ORGANIC GROWTH

A. Micro-organic growth thrives in turbine fuel and appears as a soapy, slippery slime on the inside surfaces of fuel storage tanks. Microorganisms of bacteria and fungi multiply rapidly and may cause serious corrosion in aircraft fuel tanks, as well as clog fuel filters, screens, and control units. Therefore, turbine fuel storage tanks should be checked frequently for the presence of slime or micro-organic growth. If found, the tank should be cleaned thoroughly to assure removal of the micro-organic growth and prevent further contamination.

D. DIRT, LINT, AND DUST

A. Dirt, lint, and dust may collect on fuel dispensing hose nozzles when proper storage receptacles are not used. Fuel hose nozzles should not be stored in such a manner that dirt or moisture will collect in them. Always check the nozzle for dirt and water before using it.

E. CONTAMINATION WITH OTHER TYPES OR GRADES OF FUEL

A. Contamination with other types or grades of fuel can cause aircraft engine damage and possible failure in flight. Turbine fuels mixed with aviation gasoline reduce the antiknock and volatility of fuels required for reciprocating engines. Quantities of aviation gasoline mixed with turbine fuels will cause damaging lead deposits to collect in jet engines when used indiscriminately. Transportation or storage of turbine fuel in tanks previously used for storage or transportation of aviation gasoline is not recommended as contamination from rust and scale, or a possible change of fuel specification, may result.

F. ADDITIVES

A. Additives: Certain turbine engine powered aircraft require the use of fuel containing anti-icing additives. Therefore, fuel personnel must know whether or not the fuels they dispense contain additives. When anti-icing additives are to be added to the fuel, the manufacturer’s instructions (usually printed on the container) should be followed to assure proper mixture. Anti-icing additive content in excess of 0.15% by volume of fuel is not recommended as higher concentration can cause the aircraft fuel capacitance system to give erroneous indications. Concentrations of at least 0.05% additive by volume of fuel are effective in eliminating microbial growth.

20.4 Fuel Dispensing Equipment

A. Fuel servicing vehicles should be conspicuously and legibly marked to indicate the type and grade of fuel.

(1) Markings should be displayed on each side and on the rear of the vehicle in CONTRASTING colors.

(2) Fuel hydrants and pit installations should be identified similarly, according to type of fuel and grade.
Turbine fueling vehicles should be marked to show whether or not anti-icing additives are contained in the fuel being dispensed.

Leaking or otherwise defective pumping equipment, plumbing, hoses, nozzles, and grounding cables of fuel dispensing vehicles and stationary facilities should be repaired before further use. Fuel/nozzle/lever stop notches should be removed to avoid the possibility of an inadvertent blocking open of the valve.

Fuel dispensing vehicles, and stationary facilities, should be equipped with appropriate fire extinguishers, fire blankets, static grounding cables, explosion proof flashlights, and ladders. Fire extinguishers should be located so they are accessible from either side of the vehicle and remote from probable fire hazard.

Fueling vehicles should be positioned as distant from the aircraft as permitted by the length of the fuel dispensing hose. Mobile units should be parked parallel to or heading away from the aircraft wing leading edge, so it may be moved away quickly in the event of an emergency. When the fueling operation is completed, the fueling vehicle should be parked at least fifty feet from aircraft or buildings and positioned in a manner to permit removal from the area without delay.

20.5 Fueling procedures

A. GENERAL

A. Fueling procedures: Fueling personnel should first check with the flight crew to determine the type and grade of fuel required, including additives for the aircraft. It is a good practice to have the pilot sign a demand, identifying the grade and quantity of fuel desired. In the absence of the flight crew, fueling personnel should check the placard located near the aircraft fuel tank filler port, or the aircraft owner’s manual that is usually carried in the aircraft, to determine the type and grade of fuel required.

Check to ensure that:

(a) No electrical or radio equipment in the aircraft is energized or being maintained while fuel is being dispensed into the aircraft, except those switches that may require energizing to operate fuel selector valves and quantity gauge systems.

(b) Qualified personnel should be stationed at the aircraft fuel control panel during pressure fueling operations.

(c) Fueling personnel should not carry objects in the breast pockets of their clothing when servicing aircraft or filling fuel service vehicles because loose objects may fall into fuel tanks.

(d) Matches or lighters should never be carried during fueling operations.

(e) Because of the high lead content, direct avgas fuel contact with skin or the wearing of fuel saturated clothing should be avoided. Skin irritation or blisters may result from direct contact with fuel.

(f) Immediate medical attention should be sought if fuel enters the eyes.
(g) In the event of fuel spillage, discontinue fueling operations until the spill can be removed, using proper safety precautions.

**B. FUELING FROM MOBILE EQUIPMENT**

The following sequence should be followed by the fueling crew.

(a) Connect a grounding cable from the fueling vehicle to a satisfactory ground. Grounding posts usually consist of pipes or rods driven far enough into the ground to result in a zero potential.

(b) Connect a ground cable from ground to the aircraft (on landing gear axle or other unpainted surface). Do not attach ground cables to the propeller or radio antenna.

(c) Connect a grounding cable from the fueling vehicle to the aircraft. The fueling vehicle may be equipped with a “T” or “Y” cable permitting ground attachment first and grounding of the aircraft with the other end.

(d) Connect a grounding cable from the fuel nozzle to the aircraft before removing the aircraft tank cap. This bond is most essential and needs to be maintained throughout the fueling operation and until the fuel cap is replaced.

*CAUTION: Conductive-type fuel hose does not provide a satisfactory method of bonding.*

(e) The fuel dispensing equipment grounding cables should be removed in the reverse order of the sequence outlined above.

**C. FUELING FROM HYDRANTS, PITS, AND CABINETS**

(a) Connect the grounding cable from the dispenser to the aircraft.

(b) Connect the grounding cable from the hose nozzle to the aircraft before removing the fuel cap.

**D. OVERWING FUELING**

The fuel filler hose should be draped over the wing leading edge. Never lay the fuel filler hose over the wing trailing edge because aircraft structural damage may result. A simple rubber shower mat may be used to provide protection for wing leading edges during fuel operation. Step ladders or padded upright ladders may be used to provide easy access to high wing and large aircraft. Standing on wing surfaces should be avoided and never stand on wing struts. Hold the fuel nozzle firmly while it is inserted in the fuel tank filler neck and never block the nozzle lever in the open position. Be sure that fuel filler caps are replaced and securely latched when fueling is completed.

**E. UNDERWING FUELING**

Discharge possible static buildup in the fuel dispensing hose by touching the pressure nozzle to an unpainted part of the aircraft, such as a landing gear axle, before attaching to the aircraft filler receptacle. **No static ground wire between the filler nozzle and the aircraft is necessary.**
F. FUELING FROM DRUMS

Refueling from drum storage or cans should be considered as an unsatisfactory operation and one to be avoided whenever possible. All containers of this type should be regarded with suspicion and the contents carefully inspected, identified, and checked for water and other contamination.

(a) Drums or cans should, if practicable, be protected from the sun and weather. All drums should be stored off the ground and on their sides, with the bungs below the liquid level, and in such a manner that they are visible and accessible. Drums stored vertically can accumulate water around the bungs which can be sucked into the drum by thermal heating and cooling of the fuel. Additionally, fuel in the drums or cans should be used according to the fueling delivery date - oldest stock first. AVGAS has 6 months shelf life; therefore old fuel should be sampled and checked by a laboratory before use in an aircraft.

(b) Only sound clean drums with good interiors should be used. Where fuel storage in drums has occurred for long periods, the use of the fuel is questionable unless it has been tested for quality. Bungs should always be screwed tightly into empty drums because an open bunghole allows hazardous vapors to escape from the drum after the drum has been emptied.

(c) When fueling from drums, it is advisable to use a 5 micron filtered portable pumping unit, the best filtering equipment available locally or, as a last resort, a chamois skin filter and filter funnel.

Remember refueling from drums or cans is considered to be unsatisfactory. Extraordinary precautions are necessary to eliminate the hazards of water and other contaminants.

F. WATER DRAIN

The aircraft fuel tank sumps should be drained before each fuel servicing to remove water that may have accumulated from condensation or entered the tank during fueling operations. Draining fuel sumps immediately after fueling serves little purpose because the agitation action of fuel entering the tank may suspend water and contaminants - which can remain suspended for many minutes and may not settle out until the aircraft is airborne.

20.6 Procedures

A. REFERENCES

FAA AC 150/5230, Aircraft Fuel Storage, Handling, and Dispensing on Airports, as amended
FAA AC 20-125, Water in Aviation Fuel

B. REVIEW PROCEDURES

A. Review the Operator’s Manual. Ensure that the manual indicates whether services will be performed by the operator or contracted out.

(1) Review the operator’s manual to ensure that it defines the following:

   i) Lines of authority and responsibilities
ii) The operator’s training program
iii) The vendor’s training program, if applicable

(2) Ensure that the manual contains procedures for the following:
   i) Inspection of incoming fuels
   ii) Elimination of fuel contamination
   iii) Use of dispensing equipment
   iv) Refueling and defueling, by specific make and model of aircraft

(3) Ensure that the manual includes procedures for record retention and ongoing inspections of the following:
   i) Fuel (millipore checks, etc.)
   ii) Storage facilities and dispensing equipment
   iii) Filters
   iv) Safety equipment
   v) Training programs for servicing personnel
   vi) Individual training records
   vii) Vendors (in accordance with operator’s program)

(4) If the manual is acceptable at this point, continue on to the facilities inspection. If the manual is unacceptable, return it to the operator for corrections and/or revisions.

C. Inspect the Facility

(1) Ensure that:
   i) Personnel training requirements are documented and current
   ii) Training is conducted according to the manual curriculum
   iii) Piping is marked and color coded to identify fuel type and grade
   iv) Control/cutoff valves are clearly marked with instructions for emergency use, e.g., on/off

(2) Ensure that the fuel farm/storage area provides for the following:
   i) Proper security (fenced and posted)
   ii) Proper display of “Flammable” and “No Smoking” signs
   iii) Markings to identify type/grade of fuel

(3) Ensure that the equipment includes the following:
   i) A positive low point sump
   ii) Adequate fire extinguishers

(4) Ensure that fuel filters/filter separators contain, at a minimum, the following:
   i) An inlet strainer
ii) Inflow and outflow filter/separators sized to match maximum pump flow capacity

iii) Differential pressure check system

iv) Positive water defense system

v) Sump drain with outlet located to facilitate capture of outflow

vi) Fuel sampling (millipore or equivalent) fittings downstream of all filters and filter/separators

(5) Ensure that hoses, nozzles and outflow connectors are:

i) Specifically designed and tested for delivery of aviation fuels

ii) Controlled by spring loaded, non by-passable automatic (dead man) fuel flow cutoff valves

iii) Equipped with dust cap or other feature that will minimize contaminant introduction into fuel/system

iv) Equipped with non by-passable 100 mesh nozzle/connector screens

v) Color coded to identify fuel type

(6) Ensure that electrical equipment, switches, and wiring are of a type or design approved for use in hazardous locations (explosion proof, e.g., free of exposed conductors, contacts, switches, connectors, motors, etc).

(7) Verify that grounding and bonding equipment ensures that piping, filters, tanks, and electrical components are electrically bonded together and interconnected to an adequate electrical ground. The system should have ground wires, bonding wires, and clamps adequate to facilitate prompt, definite electrical ground connection between fueler/pit/cabinet, grounding system, and aircraft being fueled.

(8) Ensure that fuel tenders and fueling pits have the following:

(a) Appropriate markings displayed, e.g., “DANGER”, “FLAMMABLE”, “NO SMOKING”, fuel grade, standard hazardous material placard, filter due dates, and emergency fuel shutoff.

(b) Appropriately placed fire extinguishers

(c) Air filter/spark arrestor and a leak-free exhaust system terminating in a standard baffled original equipment type muffler, if equipped with internal combustion engine
Chapter 21

Short Term Escalation & Life Development Program Procedures

21.1 BACKGROUND

This chapter provides guidance for approving short term escalation procedures and life development programs (long term) for aircraft, engines, and components based on procedures contained in the operator’s Maintenance Manual.

21.2 GENERAL

Time limitations are maintenance intervals established by the provisions of an approved reliability program or by an operator’s life development program. They are based on continuing analysis and surveillance of a fleet’s operating performance. Since operators try to obtain the maximum safe operating life from a component yet also try to avoid delays due to units being operated to the point of failure, the time limitations must be of a conservative average.

Note: If service records indicate that any item consistently requires repair, adjustment, or other maintenance within the current time limitations due to damage, wear, or deterioration, the operator must correct the problem before applying for any increase.

An operator may therefore need to adjust these intervals for an individual component, engine, or aircraft.

A. USE OF A SHORT TERM ESCALATION

(1) Under controlled conditions, an operator may use a short term escalation (overrun) for an individual component, engine, or aircraft without affecting safety. These procedures require close monitoring to ensure that they do not conceal unsound maintenance practices, maintenance program deficiencies, or poor management decisions.

(2) Short term escalations for operators without approved procedures in the company MM must be approved by the CAA NEPAL on a case by case basis.

(3) Operators with approved procedures do not require prior approval before using an escalation. The operator must, however, inform the CAA NEPAL of an escalation as soon as possible after the escalation is put into effect.

(4) A short term escalation should only be used after carefully analyzing the history of the aircraft and its components. A review of the proposed escalation should include:

- Previous inspections results.
- Supplemental/additional inspections that may be needed to ensure continued airworthiness during the escalation.
- Items not covered by the escalation. The escalation must not cause these items to exceed their maintenance intervals.

(5) Maximum short term escalation intervals may be a percentage of an existing interval for a particular inspection, or may be designated in hours of service, in cycles, or in other increments. Acceptable escalations could be 10% of the currently approved...
B. EXTENSION OF SHORT TERM ESCALATION

For operators with an approved in-house approval procedure the 500-hour/cycle maximum time limit for an escalation is usually sufficient for an operator to position and/or repair the affected item. Occasionally, an operator cannot effectively accomplish the task within this time limit. After an in-depth review of this situation, an individual item may be extended beyond the 500-hour limit. In order to do this, an operator must seek approval from the Director. This extension remains in effect for a prescribed time limit unless the component or inspection is accomplished prior to the time limit.

21.3 PROCEDURES FOR APPROVAL OF IN-HOUSE SHORT TERM ESCALATION PROCEDURES

The inspector must ensure that the procedures accomplish the following:

(1) List the operator’s management personnel with escalation approval authority. These personnel must be senior management and preferably include the Quality Manager.

(2) Define the maximum limitations for a short term escalation.

(3) Contain criteria that define the type of data acceptable for justifying a short term escalation.

(4) Correspond with the overall maintenance program. The procedures must ensure that an escalation will not create an unsafe condition.

(5) Restrict the occurrence of repetitive short term escalations that indicate a need for a change in the maintenance program.

(6) Provide a method for recording all escalations, with provisions for submitting/reporting to the CAA NEPAL.

21.4 PROCEDURES FOR LONG TERM TBO INCREASES

A. LONG TERM INCREASES IN THE APPROVED TBO

Long term increases in component, engine, or propeller overhaul intervals must be approved by the CAA NEPAL and are normally controlled by a Life Developing Program using the sampling method. In the Life Development Program engine O/H periods may be increased in 10% increments of the currently approved period, but not to exceed 500hrs between samples.

B. PROGRAM APPROVAL

- If an operator wishes to increase the approved TBO he should request approval from the CAA NEPAL to initiate a Life Development Program. These approvals are given for specific items by part number. The request should include full details of the program advising the following details:

  The TBO period expected to be achieved,

The sampling intervals proposed,
The name of the overhaul agency to be used for this program (operators should remain with the same overhaul agency during this program.

Evidence that the engine manufacturer supports such an escalation program.

The operator must also submit justification to support the requested increase. The justification must include a satisfactory strip report from the last two overhauls carried out at a manufacturers approved overhaul period. The strip reports must include a statement from the approved overhaul agency supporting an increase in the TBO period. The data must indicate that the increase will not adversely affect the airworthiness of the aircraft. Industry experience and manufacturer’s recommendations for similar equipment can be used as supporting justification, but shall not be the sole source.

**SAMPLING PROGRAM**

In the Life Development Program engine O/H periods may be increased in 10% increments of the currently approved period, but not to exceed 500hrs between samples. Movement from one sample period to the next should be based on satisfactory service experience and a teardown examination, by a manufacturer’s approved overhaul facility, of at least two exhibit samples at each sample stage. The engines chosen for exhibit must have operated to within 5 percent of the currently approved time interval and must have accrued at least 70% of its operating time with the current operator. No engine may proceed to the next sample stage unless both previous samples were satisfactory and the O/H agency has recommended an increase to the next sample stage.

The Inspector must ensure that the part or engine sampled represents the total sample population and that it has not been given special treatment or been subjected to early inspections by the operator.

*NOTE:* Under no circumstance may internal components with fatigue life (Group ‘A’), established by the manufacturer exceed the manufacturers published periods. These items are excluded from the program.

**PHYSICAL INSPECTION OF SAMPLES**

Physical inspection of samples need not be conducted by a CAA NEPAL Airworthiness Inspector if the overhaul agency is approved by the manufacturer to recommend overhaul period increases and properly documents the work. However, the assigned Inspector must coordinate the inspection process with the certificate holder.

**ENGINE ACCESSORIES**

Engine accessories such as FCU, fuel pumps etc. may not have time interval increases in line with the engine inspection/overhaul time. These items must undergo their own individual escalation program.

**MONITORING**

Close monitoring of the operation may be required by the inspector to ensure the following:

- The authorization is not being abused
- The manual procedures are being followed
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Chapter 22

Structural Integrity Programs of Aging Transport Category Airplanes

22.1 BACKGROUND

This chapter provides background information and guidance for Airworthiness Inspectors in understanding and approving a structural inspection program for ageing transport aircraft.

As airplanes age, the probability of both fatigue and corrosion damage occurring on primary structure increases. Maintenance requirements to detect such damage are very important. Corrosion accelerates fatigue damage, and increases the potential for multiple-site damage, which can significantly reduce residual strength below certification requirements. Therefore, more frequent structural inspections may be required to ensure early detection of fatigue and corrosion damage. In general, as airplanes become older, a more conservative approach should be taken with the SIP. Intervals should be more toward reduction in time between successive planned inspections than to increasing the time between inspections.

On April 28, 1988, a Boeing 737 airplane experienced an in-flight decompression and separation of approximately 18 feet of the fuselage skin and structure at the top of the airplane. A post-accident investigation revealed the fuselage had many fatigue cracks and corrosion, despite the operator’s compliance with the maintenance program. The National Transportation Safety Board (NTSB) determined the probable cause of this accident was the failure of the airline’s maintenance program to detect the presence of significant disbonding and fatigue damage, which ultimately led to failure of a fuselage lap joint and the separation of the fuselage upper lobe.

The NTSB made 21 safety recommendations as a result of its investigation of the accident. One of the safety recommendations, A-89-53, states the following:

“Provide specific guidance and proper engineering support to Inspector’s to evaluate modifications of airline maintenance programs and operations which propose segmenting major maintenance inspections.”

22.2 GLOSSARY

**SIGNIFICANT STRUCTURAL ITEM (SSI):** an SSI is defined as a principal structural element that could fail and consequently reduce the structural integrity of the airplane.

**REPAIR ASSESSMENT PROCESS:** A Repair Assessment is a process by which an operator evaluates the impact structural repairs has on damage tolerance. It includes the repair examination, classification, and (if required) determination of inspection requirements.

**DAMAGE TOLERANCE:** Damage Tolerance is the ability of the structure to sustain anticipated loads in the presence of damage, such as fatigue cracks, until it is detected through inspection or malfunction and repaired.
22.3 GENERAL

A. AGEING AIRPLANE STRUCTURAL MAINTENANCE PROGRAMS

After the accident, a task force, including airline operators, manufacturers, and regulatory authorities, was established to address aircraft structure and other issues relating to ageing airplanes. This task force dealt with issues affecting continuing airworthiness of ageing large transport category airplanes and identified five structural initiatives which would be the cornerstone of the ageing airplane program. These initiatives are:

1) structural modifications,
2) corrosion prevention and control (CPCP),
3) supplemental structural inspections, (SSIP)
4) structural repair assessment requirements; and
5) structural maintenance program general guidelines, as well as airplane manufacturer model specific guidelines.

One of the basic elements of a continuing airworthiness maintenance program is structural inspection and airframe overhaul. This element addresses the structural inspections identified in such documents as Maintenance Review Board (MRB) report, airplane manufacturer’s maintenance planning data documents, service bulletins, airworthiness directives (AD), and the airworthiness limitations section in the Instructions for Continued Airworthiness. In order for the structural inspection program (SIP) to be effective it must be continually reviewed as part of the operator’s continuing analysis and surveillance system. A periodic structural assessment of each airplane model, based on service experience, should be accomplished by the operator in order to determine if the operator’s maintenance program is effective.

B. STRUCTURAL INSPECTION INTERVALS

The maintenance program should include provisions to reduce the time between inspections as the airplanes age. This can be achieved by reducing the time between inspections or by transferring inspections to a lower level check. These actions are considered appropriate under the following circumstances:

1) When findings from successive inspections, performed at the same frequency, reveal an increasing number of discrepancies.
2) When discrepancies begin to occur in the operator’s fleet which require extensive repair or replacement of primary structural components.
3) When findings following the implementation of the CPCP indicate the need for more frequent corrosion inspections.

C. AIRPLANE DOWN-TIME (days out of service)

Ageing airplane program requirements are expected to increase the amount of work required during heavy maintenance visits by up to 50 percent during implementation and by 10 to 15 percent during subsequent visits. Normally there will be a point in the operational life of the airplane when more down- time should be allocated to perform structural inspections. Continuous Analysis and Surveillance program (if the operator is
required to have one) may be a useful tool to identify this point. Any of the following could be an indicator that additional down-time is needed. They are:

1) Maintenance release schedules not being met.
2) Maintenance actions deferred to a higher level or next check.
3) A sudden increase in down-time to correct significant structural discrepancies resulting from non-routine findings.

If the maintenance program correlates with requirements for airplane age and utilization, the down-time to accomplish identical structural work packages for successive structural inspections should remain relatively constant. If the maintenance program is effective, the number of structural discrepancies in a given airplane zone should not change significantly between successive checks.

D. AIRPLANE UTILIZATION

Airplane utilization is an important factor to consider in the evaluation of the total maintenance program. The SIP is especially important as utilization rates change. The numbers of takeoffs and landings, taxi loads, in-flight gust loads, and pressurization cycles have a direct impact on crack initiation and growth. For example, if a change in route structure decreases the average flying time between two points, there will be an increase in the number of flight cycles between checks. If inspection intervals are defined in flight hours, a reduction in flight hour utilization will extend the calendar time between inspections.

E. LOW UTILIZATION AIRPLANE PROGRAMS

Airplanes with utilization well below that intended by the airplane manufacturers original design estimate are subject to a higher degree of environmental damage on both the airframe and engines. Maintenance programs should recognize low utilization airplanes and be consistent with the airplane manufacturer’s program. In most cases, airplane manufacturers have developed model specific low utilization programs. If a manufacturer’s program does not exist, the operator should tailor its maintenance or inspection program and overhaul concepts on realistic calendar inspection intervals, with a calendar cap on “C” and “D” or equivalent checks.

F. AIRPLANE STORAGE

Airplanes removed from service and put in short or long term storage are required to have all scheduled AD’s, CPCP inspections, and any other scheduled maintenance tasks accomplished prior to returning to service.

G. MAINTENANCE FACILITIES FOR AGEING AIRCRAFT

The facility can have a significant influence on the quality of work performed and the effectiveness of the maintenance program. Ageing airplane program requirements dictate increased access to areas of the airplane that may have had only limited or no access before. Certain primary structure may have to be removed from the airplane to facilitate inspection and repair. This may require the airplane be shored to prevent alignment problems and adverse loading conditions on the structure. Operators should assure
adequate facilities are available to perform these types of complex ageing aircraft inspection tasks.

H. PHASING OR SEGMENTING STRUCTURAL INSPECTION WORK PACKAGES - BACKGROUND INFORMATION

Phasing or segmenting is the subdivision of scheduled maintenance work packages, into combinations of smaller work packages, to be accomplished at lesser inspection intervals, such that the total work is completed within the required time frame.

During the accident investigation of the Boeing 737 airplane, the NTSB identified three factors of concern in the airlines maintenance program. One of these was “the manner in which a highly segmented SIP was implemented.” The airline had adopted the practice of inspecting the airplane in small increments. The airline’s “D” check inspection of the Boeing 737 airplane was covered in 52 independent work packages. Limited areas of the airplane were inspected during each work package and this practice precluded a comprehensive assessment of the overall structural condition of the airplane. The NTSB concluded that 52 block/independent work packages is an inappropriate way to assess the overall condition of an airplane.

Comprehensive ageing airplane structural inspections can best be accomplished when the airplane is opened and inspected during a heavy maintenance check, like a “D” or equivalent outlined in the airplane manufacturers maintenance planning data documents. Some operators have found it efficient to use yearly block “C” checks with a phased or segmented ¼ “D” check inspection. In general, phased or segmented inspections that have been broken down into many smaller packages may dilute the intent of the airplane manufacturer’s maintenance planning data and may not provide sufficient depth of inspection that will permit an effective assessment of the condition of ageing large transport airplanes or any other large transport category airplane.

22.4 REGULATORY REQUIREMENTS

HISTORY

FAA Advisory Circular 91-56 was released in 1981 to recommend the supplemental structural inspection program (similar to FAR 25.571 damage tolerance requirements for the airplanes certified to amendment 45) as an alternative to service life limits on the older airplanes. This results in inspection programs of selected structural details that will detect the first crack in the fleet prior to reaching critical length.

A. CHANGE FROM CANDIDATE TO THRESHOLD FLEET

Switching from a candidate fleet system to a threshold based system is one of the major recent changes to the SSID made by the FAA. With this system, all airplanes exceeding the threshold become part of the SSID program.

B. REPAIR ASSESSMENT PROGRAM

Another industry change has been to develop a repair assessment methodology which could be used to efficiently evaluate existing repairs. A survey form was created to record key repair design features needed to do a repair assessment. Airline personnel can use the form to document the configuration of each observed repair as well as classify repairs into one of
three categories.

Simplified methods to determine the damage tolerance characteristics of repairs will enable an operator to perform a repair assessment without manufacturer assistance. This methodology is contained in each Repair Assessment Guidelines document, which was recently approved by the FAA and is considered acceptable for incorporation directly in an operator’s maintenance program.

**EXAMPLE**

This photograph illustrates the concern of the Repair Assessment Program. The repair doubler was installed per the SRM when the airplane was in service. During fatigue testing of the fuselage after it was removed from service, a crack initiated beneath this doubler and was not detected until it was 44 inches long. The crack was hidden from visible inspection externally by the doubler and internally by a stringer. Even though the repair was structurally satisfactory (prior to the crack initiation), this program would require supplemental inspections after exceeding an inspection threshold

**C. ACTION**

The FAA has made it mandatory to carry out a repair assessment of the fuselage pressure boundary structure. This new rule will require the incorporation of repair assessment guidelines into the CAA approved maintenance programs of each operator. The Repair Assessment Guidelines document will normally be incorporated into the maintenance program typically (B737 classic) at 60,000 cycles.

The purpose of the assessment guidelines is to establish damage tolerance based supplemental inspections to detect damage, which may develop in repaired areas, before that damage degrades the load-carrying capability of the structure below certification levels. The manufacturer produced Repair Assessment Guidelines document provides the information necessary to evaluate the existing repairs on the airplanes. This evaluation will determine the repair category.

- **Category A** - Permanent repair: Baseline Zonal Inspections are adequate to maintain the structures damage tolerance.
- **Category B** - Permanent repair: Supplemental inspections are required to maintain the structures damage tolerance.
- **Category C** - Time limited repair: Supplemental inspections are required to maintain the structures damage tolerance until it is replaced with a permanent repair.
- **Not structurally satisfactory** - This repair must be replaced prior to further flight.
If a repair is determined to be Category B or C, the document will provide the data necessary to determine the inspection requirements. This includes the replacement requirements for Category C repairs.

22.5 CONCLUSIONS

Safe operation up to and beyond the design life of an aircraft is achieved by an effective maintenance program. Structural maintenance tasks can be expected to increase due to fatigue related cracking as airplanes stay in service beyond their design life. To offset this situation, maintenance initiatives have been developed to ensure that the continued airworthiness of airplanes is achieved for operation up to and beyond the design life. Scheduled maintenance checks contained in MPDs are used to address environmental and accidental damage that can occur at any time as random events. Inspection requirements to detect fatigue damage are contained in Supplemental Structural Inspection Documents. The Ageing Airplane Program initiatives begin at various stages in an airplane’s service life. The Service Bulletin Modification program was developed to reduce reliance on continuing inspections as a means to ensure airworthiness. The CPCP was established to make mandatory corrosion inspections which had previously been only recommendations in the basic maintenance programs.

The Repair Assessment program will require operators to assess fuselage pressure boundary structure repairs from a Damage Tolerance perspective.

The Widespread Fatigue Damage program is developing new inspection requirements to address fatigue cracking in similarly stressed and configured structural details.

22.6 PROCEDURES

Inspectors must verify that the operator’s CAA-approved maintenance or inspection program conforms to the following:

A. The CAA-approved maintenance or inspection program is consistent with the airplane manufacturer’s maintenance planning data (MPD), supplemental structural inspection program (SSIP), corrosion prevention control program (CPCP), and repair assessment guidelines, all with reference to scope and detail of the work to be performed. If phased or segmented maintenance or inspections are being accomplished, the program must be reviewed to determine an equivalency in scope and detail to the manufacturer’s maintenance planning data.

B. Low utilization airplane maintenance or inspection program is consistent with airplane manufacturer maintenance planning data for low utilization airplanes, if one exists, or the program is consistent with realistic calendar inspection intervals with a calendar cap on “C” and “D” checks or equivalent.

C. Assess the effectiveness of the operator’s CAA-approved maintenance and inspection program and ensure modifications are implemented in a timely fashion.
23.1 Objective

This chapter provides guidance for evaluating an application from an operator to allow him to authorize ferry flights. This authorization is normally granted by amending his operations specifications or CMM and Operations manual to allow for the in-house issue of a special flight permit to conduct a ferry flight.

23.2 General

A. Definition: Damaged aircraft - An aircraft that has sustained physical damage or has inoperative/malfunctioning equipment.

B. Issuance: The authorizing regulation of the CAA, should not automatically authorize the issuance of permits to all operators. Therefore, an eligible operator's operations specifications or Company Manuals (operations and maintenance) will be used to authorize the issue of such permits and to ensure responsible utilization of the permit.

C. Eligibility

(1) The authority to issue special flight permits should only be given to certain operators subject to the following regulations:

(2) Aircraft involved in an accident or incident may not be ferried prior to notifying the CAA Nepal accident investigation coordinator.

(3) An Airworthiness Directive (AD) may dictate that safety demands further limitations. The AD may limit ferry flights to those specifically approved by the CAA.

No person may operate an aircraft to which an AD applies except in accordance with the requirements of that AD. Therefore, if an AD requires compliance before further flight, with no provision for the issuance of special flight permit, the operation of the specified aircraft would not be permitted.

D. Manual Review

(1) The operator should consider certain conditions and limitations necessary before authorizing the operation of an aircraft. These conditions and limitations should be included in the operator's manuals.

(2) When reviewing manual material, the following items should be considered:

(a) Technical data

(b) Operational equipment necessary for safe operation of the aircraft

(c) Aircraft weight limits

(d) Fuel distribution limits

(e) Center of gravity limits

(f) Aircraft maneuver limitations
(g) Flight equipment usage, limitations, e.g., autopilot, etc.
(h) Airspeed limits
(i) Meteorological limits, including:
   * Conditions to be avoided
   * Required inspections when these conditions are encountered
   * Weather minimums

E. Authorization for Ferry Flights with one Engine Inoperative.
Certain large transport category aircraft operators may be authorized to conduct a ferry flight of a four engine airplane or a turbine engine powered airplane equipped with three engines, with one engine inoperative, to a base for the purpose of repairing that engine. The following restrictions should apply:

(1) The particular airplane model must have had a test flight conducted with an engine inoperative in accordance with performance data contained in the applicable airplane flight manual.

(2) The approved airplane flight manual must contain the performance data.

(3) The operator’s manual must contain operating procedures for the safe operation of the airplane, including the specific requirements listed in the appropriate regulation.

(4) The operator may not depart an airport where the initial climb-out is in thickly populated or the weather conditions at the takeoff or destination airport are less than those required for Visual Flight Rules (VFR) flight.

(5) Only required flight crewmembers can be carried aboard during this ferry flight.

(6) The required flight crewmembers must be trained, and be thoroughly familiar with the company’s operating procedures and the airplane Approved Flight Manual, for one-engine inoperative ferry flights.

23.3 APPLICATIONS INVOLVING FOREIGN AIR TRANSPORTATION
ICAO Annex 8 recognizes the temporary loss of airworthiness due to damage to the aircraft. In this case, damaged aircraft can refer to inoperative or malfunctioning equipment as well as physical damage to the aircraft. In such an event, Annex 8, Part II, recognizes that the country of registry may allow the aircraft to be ferried to a base where it can be restored to an airworthy condition.

Since Annex 8 provides for this flight situation, an operator is not required to obtain permission to fly over, into, or out of foreign countries when exercising the provision of a special flight permit for purposes of repair.

NOTE: This authorization does not extend to situations, which involve flying an undamaged aircraft to a base where modifications will be performed.

23.4. DISPLAY OF PERMIT
The operator must display in the aircraft the current airworthiness certificate, including the special flight permit or authorization. The operator must carry on
board the aircraft a copy of those conditions and limitations imposed by the Director and contained in the operations specifications or company manual.

23.5 PROCEDURES

A. Review the Operator's Operations and Maintenance Manuals

(1) Ensure that the manuals have the following procedures for ferry flights:

(a) Provisions for conveying the authorization to the operating crew.

(b) A system for recording details of each flight conducted under this authorization.

(c) Procedures to determine that the proposed special flight complies with the (insert country name) Regulations and is not prohibited by any Airworthiness Directives (ADs).

(d) Procedures to allow additional crew members and other authorized persons to be carried aboard the aircraft during ferry flights when the aircraft flight characteristics have not been appreciably changed or its operation in flight has not been substantially affected.

(e) Procedures to ensure the display of the current airworthiness certificate and the special flight permit or authorization.

(f) Procedures to ensure the review of the following items prior to releasing the ferry flight:
   - Technical data to which the aircraft must perform
   - Operational equipment necessary for safe operation of the aircraft
   - Aircraft weight limits
   - Fuel distribution limits
   - Center of gravity limits
   - Aircraft maneuver limitations
   - Equipment usage limitations, e.g., autopilot
   - Airspeed limits
   - Meteorological limits, including conditions to be avoided, inspections required should these conditions be encountered inadvertently, and weather minimums.

(g) Procedures to ensure that such flights are only approved by senior operations and airworthiness management staff.

(2) For one engine inoperative ferry flights, ensure the following:

(a) The operator has a four engine airplane or a turbine engine powered airplane equipped with three engines.

(b) The applicable airplane has been previously test flown with one engine
inoperative in accordance with its approved Airplane Flight Manual. The approved Airplane Flight Manual must contain the following data:

- Maximum weight
- Configuration of the inoperative propeller, if applicable
- Runway length for takeoff, including temperature accountability
- Altitude range
- Certificate limitations
- Ranges of operational limits
- Performance information
- Operating procedures

(3) The operator's manual must include the following:

- A limitation that the operating weight on any ferry flight must be the minimum necessary with the necessary reserve fuel load.
- A limitation that takeoffs must be made from dry runways unless based on a showing of actual runway operating takeoff techniques on wet runways with one engine inoperative, takeoffs with full controllability from wet runways have been approved for the specific model aircraft and included in the approved Airplane Flight Manual.
- Procedures for operations from airports in which the runways may require a takeoff or approach over populated areas.
- Inspection procedures for determining the operating conditions of the operative engines.
- A restriction that no person may takeoff from an airport in which the initial climb is over thickly populated areas or weather conditions at the takeoff and destination airport are less than those required for Visual Flight Rules (VFR) flight.
- Procedures that ensure carrying only essential flight crew members aboard the airplane during the ferry flight.
- Procedures that ensure flight crew members are thoroughly familiar with the operator's operating procedures and the approved Airplane Flight Manual for one engine inoperative ferry flights.

B. Ensure that the CAA Nepal Accident Investigator is advised prior to any authorization of an aircraft involved in an accident or incident.
Chapter 24

Type acceptance certificates for Imported aircraft

24.1. OBJECTIVE

This chapter provides guidance in the procedure for the issue of a Type Acceptance Certificate for foreign aircraft types, using an automatic acceptance procedure.

24.2 BACKGROUND

24.2.1 Recognized countries

Automatic acceptance of aircraft Type Certificates or equivalent documents from recognized countries has been instituted by many states. This chapter deals with the procedures for automatic acceptance of a Type Certificate or equivalent issued by the National Airworthiness Authority (NAA) of a contracting state.

Recognized country for the purpose of issuing type certificates is a state (ICAO contracting or not) where the NAA has been found to have a comprehensive code of airworthiness certification and oversight. States such as the USA, UK would be recognized without investigation however other states may require an in-depth analysis.

Some of these countries are in the process of international harmonization and use or should use the term “Type Certificate”, but earlier documents may be referred to as “Type Approval Certificate”, “Certificate of Type Approval”, “Fiche de Navigabilite” etc.

The foreign NAA that issued the original Type Certificate or equivalent document will be regarded as the nominated NAA for airworthiness control of the aircraft listed on that certificate.

Note: This automatic acceptance procedure must not be applied in situations where the NAA of a recognised country has issued a Type Acceptance Certificate or similar document on the basis that the NAA of another country has issued a Type Certificate.

24.2.2 Certificate of Airworthiness Categories

Type Acceptance Certificates for foreign aircraft are issued to enable Certificates of Airworthiness (C of A) to be issued in one or more of the following categories:

(a) Transport;
(b) Normal;
(c) Utility;
(d) Acrobatic;
(e) Commuter;
(f) Manned free balloons;
(g) Primary;
(h) Restricted.

C of A should usually be issued in the same category available under the foreign Type Certificate, subject to a review by the ‘Authority’ of the foreign certification basis, including any special conditions, waivers, exemptions, equivalent safety determinations etc. made by
the foreign NAA.

24.3 APPLICATION FOR A TYPE ACCEPTANCE CERTIFICATE

24.3.1 Who may apply

Either the holder of the original Type Certificate or any other person may apply for a Type Acceptance Certificate in respect of a type certificated aircraft, certificated by a recognized country. The Type Acceptance Certificate is issued in respect of the aircraft type itself. There is no certificate holder.

24.3.2 Aircraft type details

The application should state exactly which models are to be included on the Type Acceptance Certificate. These models must be included on the foreign Type Certificate. Each model included on the Type Acceptance Certificate must be covered by the data requirements of paragraph 5.4.

24.3.3 Supply of data

The data, listed in Appendix A, supporting the application should be supplied at the time of application, or, if it is not available at that time, a covering letter should be supplied giving the reasons and details of when the data will be available.

If the application relates to a variant of an aircraft type for which there is already a Type Acceptance Certificate in force, then only data peculiar to the variant need be supplied. The Type Acceptance Certificate should be amended to include the new variant.

24.3.4 Supply of continuing airworthiness data

An inherent requirement of type acceptance is the continued airworthiness support of the aircraft and components in the form of service bulletins and other instructions, amendments to documents, and foreign airworthiness directives etc.

The applicant must arrange and submit to the ‘Authority’ an undertaking from the holder of the foreign Type Certificate to continue to supply to the ‘Authority’ those items listed in Appendix A.

The ‘Authority’ should arrange with the nominated NAA for the supply of airworthiness directives issued by that NAA for the type of aircraft concerned.

24.4 CONDITIONS, REFUSAL, SUSPENSION OR CANCELLATION

24.4.1 Issue of a Type Acceptance Certificate subject to conditions

The ‘Authority’ may, under the relevant regulation, issue a Type Acceptance Certificate subject to a condition, if there are reasonable safety grounds, provided the condition is substantially the same as a condition imposed by the NAA of a recognized country on the corresponding foreign Type certificate.

The ‘Authority’ may also issue a Type Acceptance Certificate subject to other conditions, provided there are reasonable grounds for believing that issuing the certificate without imposing conditions or taking other measures would constitute a significant threat to aviation safety.
24.4.2 Refusal to issue a Type Acceptance Certificate

Note that ‘Authority’ may refuse to issue a Type Acceptance Certificate if there are reasonable safety grounds not to do so.

24.4.3 Suspension or cancellation of a Type Acceptance Certificate

The ‘Authority’ may suspend or cancel a Type Acceptance Certificate if it considers that it is necessary to do so in the interests of aviation safety. An inability on the part of the foreign Type Certificate holder to provide ongoing technical support for the aircraft type may constitute grounds for such suspension or cancellation.

24.4.4 Consultation

The ‘Authority’ should consult with and consider the views of, the applicant, the NAA that issued the foreign Type Certificate, and the manufacturer.

24.4.5 Director should exercise powers personally

Normally only the Director has the power to:

(a) issue a Type Acceptance Certificate subject to a condition in accordance with paragraph 6.1.2;

(b) refuse to issue a Type Acceptance Certificate in accordance with paragraph 6.2; or

(c) suspend or cancel a Type Acceptance Certificate in accordance with paragraph 6.3.

24.5 AGED TRANSPORT CATEGORY AIRCRAFT

The applicant should be aware that before a standard C of A can be issued to such an aircraft, the ‘Authority’ may require additional data related to the aircraft history, structural integrity programs, supplementary inspections etc.
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APPENDIX A
EXAMPLES OF TECHNICAL DATA, BY PRODUCT, WHICH SHOULD NORMALLY BE REQUESTED

1. AIRCRAFT
   a. A statement of the applicable design certification standards.
   b. General interior arrangement configuration drawings.
   c. Three-view drawing exterior configuration.
   d. Master drawing list.
   e. Master equipment list.
   f. Aircraft Flight Manual including the Configuration Deviation List, if applicable.
   g. Instructions for Continued Airworthiness.
   h. Certification compliance (checklist).
   i. Data and descriptive information needed by the Authority to approve the type certificate data sheet.
   j. Listing of service life for critical parts subject to fatigue, if this information is not provided elsewhere in the above data.

2. AIRCRAFT ENGINES
   a. Cross-Section arrangement drawing.
   b. Master drawing list.
   c. Instructions for Continued Airworthiness.
   d. Operating manual.
   e. Installation manual.
   f. Certification compliance (checklist).
   g. Data and descriptive information needed by the ‘Authority’ to prepare the type certificate data sheet.
   h. Listing of service life for critical parts subject to fatigue, if this information is not provided elsewhere in the above data.

3. PROPELLERS
   a. General arrangement drawings and model description.
   b. Master drawing list.
c. Installation manual.
d. Instructions for Continued Airworthiness.
e. Operating manual.
f. Certification compliance (checklist).
g. Data and descriptive information needed by the ‘Authority’ to prepare the type certificate data sheet.
h. Listing of service life for critical parts subject to fatigue, if this information is not provided elsewhere in the above data.

**TYPE CERTIFICATION COMPLETION CHECKLIST**

1. Resolution of all technical issues.
2. A statement from the ‘Authority’ certifying compliance with the type certification basis or agreed certification criteria (including additional technical conditions).
3. Compliance checklist.
4. Instructions for Continued Airworthiness or Airworthiness Limitations.
6. Draft Type Certificate Data Sheet.
7. Noise Evaluation Statement (not required for amended TCs). To be provided by the ‘Authority’.
8. Dates established for ‘Authority’ issuance of type certificate and delivery of first aircraft.
Chapter 25
Aircraft Airworthiness Certification Categories and Designations

25.1 OBJECTIVE
The objective of this chapter is to explain the different airworthiness certification categories and designations as may be applied to aeroplanes.

25.2 Background
Aircraft certification is the whole process of assessing an aircraft type against its type design and the aircraft’s condition for safe operation, which culminates in issue of a Certificate of Airworthiness (C of A) for an individual aircraft. Type Certification is a part-process of aircraft certification which leads to issue of a Type Certificate or equivalent document. This is necessary before the first of type or first of model C of As can be issued.

The obligation for Contracting States of the International Civil Aviation Organization (ICAO), to issue C of As, is laid down in Part II, Section 3 of ICAO Annex 8, “Airworthiness of Aircraft”. A C of A may be issued on the basis of satisfactory evidence that an individual aircraft complies with the appropriate airworthiness requirements, and that the aircraft has been constructed and assembled satisfactorily. A category block is always contained in a C of A format.

Aircraft are categorized in two discrete areas — operational and airworthiness. The former applies to the manner in which the aircraft is to be operated, i.e. Transport, Aerial Work or Private, and is referred to as its Classification of Operation. It is towards the airworthiness categorization of civil aircraft that this chapter is directed.

Inspectors should note that the detailed procedures for application and issue of C of As, in particular categories, and the operating restrictions associated with those C of As, are explained in succeeding chapters, as follows:

38 “Standard Certificates of Airworthiness”
39 “Special Certificates of Airworthiness”
35 “Type Acceptance Certificate - Automatic Issue”
36 “Aircraft Type Certificate - Non-Automatic Issue”

25.3 DEFINITION OF CATEGORY
An aircraft airworthiness category is essentially a homogeneous grouping of aircraft types and models of generally similar characteristics, based on the proposed or intended use of the aircraft, and their operating limitations.

25.4 STANDARD CERTIFICATES OF AIRWORTHINESS
A standard C of A may be issued in the following categories:

- Transport
- Normal
- Utility
25.5 SPECIAL CERTIFICATES OF AIRWORTHINESS

A special C of A is issued to an aircraft which does not meet the requirements of an applicable comprehensive and detailed airworthiness code as required for standard category aircraft.

A special C of A may be issued in the following categories:

- Primary
- Restricted
- Amateur Built

Although not categories as such, the following are discussed in this Chapter:

- Experimental aircraft
- Gliders
- Ultralights
- Exemption aircraft

A. Note that experimental aircraft are not type-certificated; such aircraft may be issued an experimental certificate for one or more of a number of specific recognised purposes, as follows:

- Research and development
- Showing compliance with regulations
- Training the applicant’s flight crew
- Exhibition
- Air racing
- Market surveys
- Operating amateur-built aircraft
- Operating kit-built aircraft
- Private operations of aircraft previously used for research and development or showing compliance with regulations

An experimental certificate is classified as a special certificate of airworthiness.

25.6 BRIEF SPECIFIC CATEGORY AND DESIGNATION INFORMATION

25.6.1. Transport Category:

(a) Transport category applies to multi-engine aircraft primarily intended for the regular public transport of passengers and/or cargo for hire or reward;
(b) Transport category generally applies to aircraft with a maximum take-off weight (MTOW) in excess of 5700 kg. Such aircraft must meet the airworthiness standards for transport category aeroplanes (FAR Part 25 (for aeroplanes) or FAR Part 29 (for rotorcraft)), or be automatically accepted from a country recognised by the Authority, or comply with the predecessors or equivalents of these standards.

(c) There are some exceptions to the requirements outlined in (b) above:

(i) Nothing precludes a multi-engine aircraft of less than 5700kg MTOW being certificated in the transport category, if that is the election of a manufacturer. However, the aircraft type must still meet the applicable standards (e.g. FARs Part 25 or Part 29);

(ii) Commuter category aircraft may be in excess of 5700 kg MTOW;

(iii) Some normal category types may be in excess of 5700 kg MTOW e.g. aircraft certificated under Special FAR (SFAR) Part 41;

(d) Some countries airworthiness standards include a transport category of aircraft based on FAR Part 23 (normal) certification, as long as certain minimum design features (such as multi-engine configuration) are met.

25.6.2 Normal Category:

(a) Normal category applies to aircraft which are intended for non-acrobatic operation, having a seating configuration (excluding pilot seats) of nine seats or less, and a MTOW of 5700 kg or less, or 2750 kg or less for rotorcraft;

(b) Normal category aircraft must meet the appropriate airworthiness standards (e.g. FAR Part 23 (for aeroplanes), or Part 27 (for rotorcraft)), or be automatically accepted from a recognized country, or comply with the predecessors or equivalents of these standards;

(c) Note that normal category aeroplanes which have been type-certificated under the JAR-VLA design requirements carry more design restrictions than the broad category specified in (a) above:

(i) single, non-turbine engine only;

(ii) two seats or less;

(iii) MTOW of 750 kg or less;

(iv) stall speed of 45 knots or less, in the landing configuration;

Operating restrictions are also placed on JAR-VLA types fitted with an engine certificated under FAR Part 32;

(d) Notwithstanding the nine seats maximum limitation expressed in (a) above, normal category includes aircraft certificated under SFAR 41 and SFAR 23 (with weight and seating limitation extensions).

(e) Non-acrobatic operation includes:

(i) any maneuver incidental to normal flying;
(ii) stalls, other than flick stalls;

(iii) lazy eights, chandelles and steep turns, in which the angle of bank does not exceed 60.

25.6.3. Utility Category:

(a) Utility category applies to aeroplanes, gliders and powered sailplanes which can be used for limited acrobatic operations, having a seating configuration (excluding pilot seats) of nine seats or less, and MTOW of 5700 kg or less. Utility category aircraft can be considered as normal category “plus” aircraft, and can thus, for example, provide more operational flexibility as a basic training aircraft;

(b) Utility category aircraft must meet the appropriate design requirements (e.g. FARs Part 22 or 23), or be automatically accepted from a recognised country, or comply with the predecessors or equivalents of these standards. Design requirements additional to those required for normal category include increased structural load and design dive speed factors;

(c) Limited acrobatic operation includes:

(i) spins (if approved for the particular type);

(ii) lazy eights, chandelles, and steep turns, or similar maneuvers, in which the angle of bank is more than 60, but not more than 90.

25.6.4. Acrobatic Category:

(a) Acrobatic category (aerobatic category has exactly the same meaning) applies to aeroplanes, gliders and powered sailplanes which can be used for acrobatic operations, having a seating configuration (excluding pilot seats) of nine seats or less, and a MTOW of 5700 kg or less. Acrobatic aircraft can be flown without restrictions, other than those shown to be necessary as a result of certification flight testing;

(b) Acrobatic category aircraft must meet the appropriate design requirements (e.g. FAR Parts 22 or 23), or be automatically accepted from a recognized country, or are aircraft which complied with the predecessors or equivalents of these standards.

25.6.5. Commuter Category:

(a) Commuter category applies to aircraft which are intended for non-acrobatic operation, and which are multi-engine, propeller-driven aeroplanes having a seating configuration (excluding pilot seats) of 19 seats or less, and a MTOW of 8618 kg or less;

(b) Commuter category aircraft must meet the appropriate design requirements (e.g. FAR Part 23), or be automatically accepted from a recognised country. The design code (from a specified amendment onwards) calls up a number of design requirements for commuter category additional to those specified for normal category, in areas such as performance, structural, control and powerplant certification, and thus confer a higher level of safety than is intrinsic to the normal category. In this sense, the commuter category design code is often referred to as “FAR 23 plus”.

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25.6.6. Manned Free Balloon Category:

(a) Manned free balloon category applies to non-power-driven, lighter-than-air aircraft, where lift may be derived by systems such as hot air or trapped light gas;

(b) Manned free balloons must meet the appropriate design requirements (e.g. FAR Part 31).

25.6.7. Special Classes of Aircraft:

(a) An example of a special class of aircraft which would be entitled to the issue of a standard C of A is an airship. An airship is defined as an engine-driven, lighter-than-air aircraft that can be steered; it may be of rigid or flexible hull construction. Hot air airships were also required to comply with the applicable requirements for the manned balloon category. A tilt rotor aircraft is another example of a unique type of design that would qualify as a special class;

(b) A certification basis for any particular special class of aircraft will be negotiated between the Authority and an applicant for issue of a standard C of A on a case-by-case basis. In this case, certification basis means an airworthiness design standard, plus any special conditions applied by the authority to that code.

25.6.8 Primary Category:

(a) A primary category aircraft (which may be an aeroplane, glider or powered sailplane, rotorcraft, manned free balloon or other class of aircraft) is of simple design and is intended for pleasure and personal use. The aircraft must:

(i) be unpwered, or powered by a single, naturally-aspirated engine;

(ii) have a stall speed of 61 knots or less in the landing configuration (or for a rotorcraft, have a maximum main rotor disc loading of 29.3 kg/sq. meter, under sea level ISA conditions);

(iii) have a MTOW of 1225 kg or less (1530 kg for seaplanes);

(iv) have a maximum seating capacity of not more than four persons, including the pilot; and

(iv) have an unpressurised cabin, if applicable;

(b) The aircraft must meet the airworthiness standards of FAR Part 26 which may include the applicable standards of FAR Parts 22, 23, 27, 31, 32, 33 and/or 35, and/or such other airworthiness design criteria that the authority considers appropriate, which may include standards proposed by the applicant for type certification, and agreed with and promulgated by the authority. It is important to note that primary category aircraft are not amateur-built aircraft;

(c) An aircraft which has been issued with a standard C of A, e.g. a normal category aircraft, can undergo a conversion process to allow it to be issued with a special C of A in the primary category; this would usually be done to realise relaxation in maintenance commitments and costs. If this process is followed, subsequent reversion to a standard C of A category may be difficult;
(e) A primary category aircraft cannot be operated for most commercial purposes; however, if maintained by a LAME or an approved maintenance organisation, the aircraft can be used for certain types of pilot training (day/VMC only) or can be rented out for non-commercial operations.

25.6.9. Restricted Category:

(a) Restricted category applies to aircraft which may carry out certain special purpose operations, usually for hire or reward. Aircraft types which may be eligible for issue of a special C of A in the restricted category include:

(i) those designed and type certificated specifically as restricted category e.g. specialist water bombers, agricultural aircraft;

(ii) ex-military aircraft of Australia, Canada, the USA, and/or the UK;

(iii) aircraft which may have been standard category, but have been modified for special purpose operations; noting that, under certain conditions, such aircraft can be transferred from restricted to a standard C of A category, and back. This is discussed in detail at paragraph 12;

(b) Restricted category aircraft may not carry passengers or cargo for hire or reward. Essential crew required for the particular special purpose operation, or needed to accomplish the work activity directly associated with the special purpose, may be carried. Particular limitations on operation may be placed on the C of A. Special purpose operations that may be carried out are:

(i) agricultural operations for example, spraying, dusting, and seeding, and livestock and feral animal control; or

(ii) forest and wildlife conservation; or

(iii) fire fighting; or

(iv) aerial surveying and scientific research for example, photography, mapping, and oil and mineral exploration; or

(v) patrolling for example, pipelines, power lines, or canals; or

(vi) weather control and atmospheric research for example, cloud seeding; or

(vii) aerial advertising for example, skywriting, banner towing, airborne signs and public address systems; or

(viii) glider towing; or

(ix) target towing; or

(x) target designation; or

(xi) any other similar operation;

(c) The restricted category can therefore include a vast range of aircraft classes and types, e.g. multi-engine ex-military bombers or patrol aircraft, used for forest fire fighting, or large, purpose-designed aircraft used for the same mission; high-
performance, corporate jet aircraft modified for high-speed target towing, commuter category aircraft extensively modified for geophysical survey etc.

25.6.10. Limited Category:

(a) The limited category varies from state to state. Some states differ markedly from the limited category prescribed by the FAA in the FARs. In some states a type certificate is not issued in the limited category (as is done in the USA) because in some states a limited category aircraft is not required to comply with any specific civil airworthiness or design standards. However, the authority must be satisfied that the aircraft meets airworthiness requirements consistent with its special purpose use. If it has been manufactured in accordance with the requirements of and accepted by an armed force, then it must have had a demonstrated history of safe operation. For other than ex-military aircraft e.g. replica aircraft, the aircraft must meet airworthiness standards and requirements that are satisfactory to the authority;

(b) The limited category caters for operation of ex-military aircraft, which are not restricted to sources listed in paragraph 8.10 (a) above. For these types, the applicant for C of A issue restores, or has the aircraft restored under a set of recommended practices and procedures. The authority or an authorised person inspects the aircraft to determine that the aircraft has been properly restored using acceptable workmanship methods, techniques and practices, and is in a condition for safe operation;

(c) Limited category aircraft can only be operated for one or more special purposes for which the C of A is in force, and these are specifically included in the C of A. They may be:

(i) parachute jumping; or
(ii) acrobatic flights; or
(iii) acrobatic training; or
(iv) mock combat; or
(v) operating historic and ex-military aircraft in adventure type operations; or
(vi) operating replica aircraft; or
(vii) exhibition flights; or
(viii) any purpose in which the sole usage of the aircraft is the carriage of persons where that carriage of persons occurs as an integral part of engaging in a recreational pursuit that is intrinsically dangerous; additionally, a limited category aircraft can be used for other specific operations in support of the special purpose operations, e.g. flying an aircraft to and from air shows; maintenance test flying etc.;

(d) Finally, limited category aircraft may carry passengers for hire or reward, subject to risk warning requirements. The aircraft can be of any shape, weight or size, but are limited to the carriage of six occupants or less (including passengers and crew), unless approved by the authority to carry more. The authorities normally exempt themselves from liabilities in regard to operation of this category of aircraft.
25.6.11 Special Flight Permit:

(a) A special flight permit may be issued where an aircraft does not meet the applicable airworthiness requirements, but can be reasonably expected to be capable of safe flight for the intended purposes, which may include one or more of the following:
   (i) flying the aircraft to a base where repairs, alterations, or maintenance are to be performed, or to a point of storage;
   (ii) delivering or exporting the aircraft;
   (iii) production flight testing new production aircraft;
   (iv) evacuating the aircraft from an area of impending danger;
   (v) conducting customer demonstration flights in new production aircraft that have satisfactorily completed production flight tests;
   (vi) assisting in searching for, bringing aid to or rescuing persons in danger on a particular occasion;
   (vii) assisting in dealing with a state of emergency;
   (viii) operations at a weight in excess of MTOW;

(b) A special flight permit normally contains, on that permit, the specific conditions and limitations pertaining to the permit operations. The authority may also relax certain regulatory requirements for operations under the permit. For e.g. the aircraft need not necessarily be registered or the aircraft may be flown without a maintenance release;

(c) A special flight permit allows operation of an aircraft outside the home state, so long as it is operated for the intended purpose, and within the time frame specified on the permit (normally for delivery or export purposes). The permit does not authorise flight over countries other than the home state without permission of those countries.

25.6.12. Experimental Aircraft:

(a) Experimental aircraft are, by their very nature, not type-certificated. “Experimental” is not a category as such, rather, it is a designation. It is also important to note that an experimental certificate does not attest to an aircraft being fully airworthy, despite being grouped under the special C of A.

(b) The experimental certificate system allows any person or commercial concern to construct an aircraft of any size and seating capacity, and with any number and type of engines. Experimental certificates can be issued for one or more of a number of specific recognized purposes as follows

Note: no passenger-carrying experimental aircraft operations can be undertaken for hire or reward.

(i) Research and Development: For example - testing new aircraft design concepts, new aircraft equipment, new aircraft installations, new aircraft operating techniques, or new uses for aircraft.
(A) This purpose is primarily intended for operations which lead to subsequent issue of a type certificate, including proof-of-concept flying, or for operations which may be pure research and development (R & D) in nature, such as determining whether an idea warrants further investigation;

(B) Both commercially-built and amateur-built aircraft are eligible for issue of an experimental certificate under this purpose. Operations are limited to genuine research and development activities. An experimental certificate is valid only for the period of time specified on the certificate, normally one year, and for the number of flights necessary to complete the R & D program;

(C) Thus the R & D purpose is essentially a transitory one, and indefinite operation under this purpose is not intended. Any other aircraft necessary to support the R & D project (such as a chase plane etc.) are also eligible for certification under this purpose;

(ii) **Showing compliance with regulations**: For example - conducting flight tests and other operations to show compliance with the airworthiness regulations including flights to show compliance for issue of Type and Supplemental Type Certificates, flights to substantiate major design changes, and flights to show compliance with the function and reliability requirements of the regulations:

(A) This purpose provides for operations to show compliance with the FARs or other relevant design code after completion of testing under the R & D purpose, where the Type Certificate holder has revised the relevant design data, or where a person has applied for approval of a major modification or design change under a Supplemental Type Certificate. It also provides for test flying undertaken by the authority as part of a type certification program;

(B) An experimental certificate for this purpose is valid only for the period of time specified on the certificate, normally one year, and for the number of flights necessary to accomplish the purpose;

(iii) **Training the applicant’s flight crew**: 

(A) Operations under this purpose are limited to flight crews (normally the aircraft manufacturer’s employees) for whom training in the experimental aircraft is necessary for subsequent operations of the aircraft in type certification programs or for production flight testing;

(B) An experimental certificate for this purpose is valid only for the period of time specified on the certificate, normally one year, and for the number of flights necessary to accomplish the training;

(iv) **Exhibition**

For example - exhibiting the aircraft’s flight capabilities, performance, or unusual characteristics at air shows, motion picture and television productions, and the maintenance of exhibition flight proficiency, including flying to and from such air shows and productions (for persons exhibiting aircraft).

(A) Operations covered under this purpose are for valid exhibition purposes only, as
described immediately above. Also included are:

- the exhibition of historic and ex-military aircraft which do not have a standard C of A in a standard category, or a special C of A in the limited category, and

- operations for the purpose of training for the exhibition or maintaining proficiency;

(B) An experimental certificate for this purpose is normally valid for an unlimited period of time. However, operations under this purpose are normally limited to a specified area in the vicinity of the airport at which the aircraft is permanently based, or at the venue of the intended exhibition, including flying to and from the venue, and are based on a submitted list of events to be attended;

(v) **Air racing:** For example - participating in air races, including (for participants) practicing for air races, and flying to and from racing events.

(A) An experimental certificate for this purpose is normally valid for one year. Operations under this purpose are normally limited to a specified area in the vicinity of the airport at which the aircraft is permanently based, or at the venue of the intended race, and are based on a submitted list of events to be attended.

(vi) **Market surveys:** For example - use of aircraft for purposes of conducting market surveys, sales demonstrations, and customer crew training:

(A) Issue of experimental certificates for this purpose are confined to:

- a manufacturer of an aircraft manufactured within the state that is to be used for market surveys, sales demonstrations, or customer crew training;

- a manufacturer of aircraft engines who has altered a type-certificated aircraft by installing different engines, manufactured by the manufacturer within the state, who may apply for an experimental certificate for market surveys if the basic aircraft, before alteration, was type-certificated in the normal, utility, acrobatic, commuter, or transport category;

- a person who has altered the design of a type-certificated aircraft to be used for market surveys if the basic aircraft, before alteration, was type-certificated in the normal, utility, acrobatic, commuter, or transport category;

(B) An experimental certificate for this purpose is normally limited to the time needed for the prescribed operations, and normally does not exceed one year. The applicant must have established an inspection and maintenance program and have flown for at least 50 hours, or at least 5 hours if it is a type-certificated aircraft which has been modified;

(vii) **Operating amateur-built aircraft:**

(A) This purpose allows an amateur builder to construct an aircraft using the same basic guidelines as for an EAA, but without an EAA help being available. On the other hand, an amateur builder can still elect to operate his or her aircraft on an experimental certificate even if an EAA assistance for the type involved is available;
(B) There are no prescribed design standards for amateur-built aircraft to be operated under experimental certificates.

(c) Amateur-built experimental certificates may also be issued to aircraft which are built from a kit manufactured by a person who may not hold a Production Certificate (PC) for the kit, as long as the major portion rule is observed;

(D) No authority approval is required before construction of this class of amateur-built aircraft is commenced, nor are stage inspections required. Prospective builders should contact an approved organisation before project commencement. Any choice of engine, propeller, wheels, etc., and any choice of materials may be used in the construction of the aircraft. The use of used or salvaged major assemblies e.g. wings, fuselage, empennage, undercarriage assemblies from type-certificated aircraft is permitted, as long as they are individually in a condition for safe operation. These assemblies will be considered in determining the “major portion”, but no credit for fabrication and assembly will be given to the builder;

(E) A construction log must be kept by the amateur builder. The approval process will consist of a general inspection of the aircraft, and a construction documentation check, prior to the issue of the experimental certificate;

(F) An experimental certificate for this purpose is normally valid for an unlimited period of time;

(G) Aircraft which are manufactured and completely assembled as a business for sale to other persons are not considered to be bona fide amateur-built aircraft, regardless of the status of the builder. Further, amateur-built kit owner(s) will jeopardize eligibility for experimental certificate issue if another person or persons build the aircraft;

(viii) Operating kit-built aircraft:

(A) This purpose provides for operation of kit-built aircraft where the kit is manufactured by a person holding a Production Certificate (PC) for the kit, and the kit aircraft is type certificated in the primary category, but the kit is assembled without the benefit of the PC holder’s supervision and quality control. The major portion rule as discussed above in 8.12 (a) (i) does not apply;

(B) An experimental certificate for this purpose is normally valid for an unlimited period of time;

(ix) Private operations of prototype aircraft previously issued with experimental certificates for the purposes of R & D, showing compliance with regulations, and exhibition:

(A) This purpose provides for limited private use of prototype aircraft subsequent to operations for purposes as per the heading above. Note that there can be only one prototype in any series of an aircraft type;

(B) Operations are confined to the carriage of six occupants maximum (unless otherwise approved by the authority), and not for hire or reward. The aircraft is subject to the same limitations and conditions as amateur-built experimental aircraft. A prototype
may be eligible for subsequent certification, as a standard category aircraft, if the aircraft has been shown to comply with the applicable airworthiness standards for the category sought, and conformance has been demonstrated throughout the aircraft’s construction period;

(C) An experimental certificate for this purpose is normally valid for an unlimited period of time.

25.7 **GLIDERS AND POWERED SAILPLANES**

Gilders and powered sailplanes are not categories for the purposes of airworthiness certification. Rather, these classes of aircraft are placed in categories which reflect their capabilities, mode of construction and degree of development, i.e.

- primary
- utility
- acrobatic
- amateur-built (experimental)
- kit-built (experimental)

Gilders are required to meet the design requirements of FAR/JAR Part 22, BCAR Section E, OSTIV (a Dutch standard) or LFSM (a German standard). In some countries all C of A activities for these classes of aircraft are undertaken by the state Gliding Federation (or similar).

25.8. **ULTRALIGHT AIRCRAFT**

Again, ultralight aircraft is not a category for the purposes of airworthiness certification. In many countries, an ultralight is considered to be a single-engine aircraft with a MTOW not exceeding 544 kg.

There are currently a number of different classes of ultralight aircraft, and they are governed by different standards.

Some ultralight aircraft may operate as normally registered civil aircraft, or under the umbrella of a relevant sport aviation organisation.

Ultralight aircraft as such are not reflected as a category in either standard or special C of A. However, depending on their registration status, design standards and modes of construction, certain ultralight aircraft could be issued with a C of A in the amateur-built or kit-built (experimental), or primary categories.

25.9 **EXEMPTION AIRCRAFT**

“Exemption” aircraft are those specified in a states regulations, and by their very nature are not generally eligible for a C of A, and are not classified as categories in the airworthiness sense, e.g.:

- Hang gliders
- Single place gyroplanes with empty weight not exceeding 250 kg
- Two place gyroplanes with empty weight not exceeding 300 kg
- Tethered balloons, kites, parasails or gyrogliders
- Weight shift controlled aeroplanes and powered parachutes
- Unmanned free balloons
- Ultralight aeroplanes

It should be noted that a number of the above classes of aircraft could also be classified “ultralights” as already discussed in the paragraph above.

25.10 MULTIPLE AIRWORTHINESS CERTIFICATION

“Multiple certification” can be viewed in two contexts:

(a) The granting of certification in two categories on the one standard C of A, e.g. normal and utility typed in as two categories for the one aircraft on its standard C of A, if the relevant design standards are met;

(b) The multiple certification procedure is directed at the capability for certain categories of aircraft to be eligible for multiple C of As if they can be converted to restricted category and back under certain prescribed conditions.

The procedure at (b) above is normally allowed for under the regulations (e.g. FAR 21). It allows two C of As (one to cover the restricted category operation, and one to cover the other relevant category) to be issued for one aircraft. The combination of limited and restricted categories is not precluded. The only categories excluded from this arrangement are primary and intermediate. An applicant for multiple C of A is entitled to them if compliance is shown with the requirements of each category when the aircraft is in the configuration for that category. Additionally, the applicant must show that the aircraft can be converted from one category to the other by removing or adding equipment using simple mechanical means.
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26.1 OBJECTIVE

This chapter provides guidance and information relating to the issue of Standard Certificates of Airworthiness (C of A) in particular categories.

26.2 BACKGROUND

26.2.1 Aircraft airworthiness certification is the whole process of assessing an aircraft type against its type design and condition for safe operation, which culminates in issue of a Certificate of Airworthiness (C of A) for an individual aircraft. Type certification is a part of the process of aircraft airworthiness certification which leads to issue of a Type Certificate or equivalent document. This is necessary before individual C of A can be issued.

26.2.2 The obligation for Contracting States of the International Civil Aviation Organization (ICAO), to issue C of A, is laid down in Part II, Section 3 of ICAO Annex 8, “Airworthiness of Aircraft”. A C of A may be issued on the basis of satisfactory evidence that an individual aircraft complies with the appropriate airworthiness requirements, and that the aircraft has been constructed and assembled satisfactorily. The airworthiness categories and designations in which C of A may be issued are described in detail in Chapter 37, “Aircraft Airworthiness Certification Categories and Designations Explained”

C of A is issued for individual aircraft as one of the preconditions to the aircraft being able to fly legally, in the sense of being fit to fly. Actual aircraft type approval stops at the issue of the Type Certificate.

26.2.3 Certification of individual aircraft (the C of A issue process) involves:

(a) ensuring that the aircraft conforms with the definition of the design and its method of construction i.e. the aircraft conforms to the type design; this in turn ensures that the aircraft meets:

(i) a design standard; and

(ii) the specified airworthiness requirements;

(b) ensuring that the aircraft is free from manufacturing and post-production test defects;

(c) ensuring that the required modifications, as dictated by both design changes and specific national Airworthiness Directives (ADs), have been embodied;

(d) ensuring that the required operational equipment has been fitted;

(e) ensuring that the aircraft’s airworthiness state is properly reflected in the required documentation including alterations have been carried out in accordance with approved data.

26.3 STANDARD CERTIFICATES OF AIRWORTHINESS

26.3.1 A standard C of A may be issued in the following categories:
26.3.2 Standard C of A is only issued to aircraft which meet prescribed airworthiness standards e.g. Part 23 (a design standard for small aircraft); Part 25 (a design standard for transport category aircraft); Part 31 (a design standard for manned free balloons).

26.3.3 Special C of A or special flight permits cover all other cases.

26.4 APPLYING FOR A STANDARD CERTIFICATE OF AIRWORTHINESS

26.4.1 Who may apply

26.4.1.1 The regulations generally state that “the holder of the Certificate of Registration (C of R) is eligible to apply for a Certificate of Airworthiness for the aircraft”

26.4.1.2 The holder of a C of R is normally the person who has the custody and airworthiness control of the aircraft (otherwise defined as the “owner”). Therefore one major prerequisite for application for a standard C of A is that the aircraft must already be registered on the Civil Aircraft Register.

26.4.2 Other basic pre-requisites

As well as the aircraft being registered and appropriately marked, in accordance with the regulations, there are normally two other basic prerequisites for issue of a standard C of A:

(1) the aircraft must have been type certificated; a Type Certificate, Type Acceptance Certificate, or equivalent document must have been issued;

(2) many states require that a fireproof plate is secured to the aircraft, eg:

“An (insert country name) aircraft shall carry, secured to the aircraft in a permanent position near the main entrance, a plate of fireproof metal or other fireproof material of suitable physical properties inscribed with the nationality mark and registration mark of the aircraft and with such other details as the authority requires to give effect to the Convention”.

26.4.3 The application form

A standard C of A application should be made on the prescribed form and would normally contain the following details.

(a) **Registration Mark**: Enter the aircraft’s registration mark after the state designator;

(b) **Manufacturer**: Enter the name of the manufacturer as it appears on the aircraft identification plate;
26.5 AIRCRAFT SOURCES

26.5.1 General

The sourcing of an aircraft involved in a standard C of A application process has a direct bearing on the expense, effort, time and data provision requirements. The relevant variables being:

(a) whether the aircraft is locally or foreign manufactured;

(b) whether the aircraft has been based in this state prior to application, or whether it is being imported;

(c) whether the aircraft is new or used;
(d) whether the aircraft is a first-of-type (FOT) or first-of-model (FOM) for the purpose of C of A application;
(e) the age of the aircraft;
(f) the modification status of the aircraft.

26.5.2 Country of manufacture

26.5.2.1 If an aircraft is one of a type manufactured in this state, then, as a general rule, there should be few complications associated with provision of data necessary for design conformance; type certification data will be held within the authority resources, and the C of A applicant would not normally be troubled in this regard.

26.5.2.2 If an aircraft of foreign manufacture has been approved for operation in this state, then it will have been issued with some form of Type Certificate or equivalent document, depending on the era of such approval.

26.5.2.3 Some states regulations allow the authority to automatically issue a Type Acceptance Certificate (TAC) for an aircraft type that has a current Type Certificate issued to it by one or more recognized overseas authorities.

26.5.2.4 If a type acceptance certificate cannot be issued as per 38.5.4 above, then a full design validation must be undertaken by the authority. This involves scrutiny of design data by the authority technical specialists, and possibly a team technical visit to the manufacturer’s site, in the case of transport category aircraft, and small aircraft if new technology or unique design is involved. The applicant for this process to be undertaken (which would normally be the C of A applicant) is liable for the costs of such an exercise, which are additional to the normal C of A costs. The whole validation process culminates in issue of a Type Certificate.

26.6 Imported aircraft

It is desirable for an application for a standard C of A for aircraft being imported into this state to be supported by a foreign export C of A or equivalent document (as discussed in more detail later in this chapter, and that local format logbooks and other documentation have been raised.

26.7 Used aircraft

Used aircraft obviously have a “history” of operation, and some data in regard to this as discussed further below will be required.

26.8 First-of-type/First-of-model

26.8.1 The following are definitions of “type” and “model”:
(a) “type” means a design and make of aircraft and refers to a group of essentially similar aircraft which, although possibly existing in different models, stem from a common basic design;
(b) “model” means a particular version of an aircraft type, such as would be distinguished from another version of the same type by a change of sufficient effect on the weight and balance, structural strength, operational characteristics, or other characteristics as would require a separate entry on the type certificate identifying
and approving the particular version as distinct from the identification and approval of other versions.

26.8.2 The authority may produce a Ground Inspection Report (GIR), based on the C of A issue exercise for a First of Type (FOT) or First of Model (FOM) aircraft. It is for this reason that such a C of A issue exercise is more time-consuming than those for subsequent aircraft of the type or model. FOT/FOM C of A issue exercises are normally only carried out by the authority inspectors. One criteria may be that the particular aircraft is a similar model to an aircraft already issued with a local C of A.

26.8.3 Any condition identified during the ground inspection will be included as a condition on the C of A for all aircraft of this type and model.

26.9 Age and modification status

Old aircraft and those incorporating major modifications usually incur some extra time and effort in terms of documentary requirements, as discussed further below.

26.10 SUPPLY OF DATA

26.10.1 The applicant should be advised that timely submission of the following data for inspection by the authority will assist in the processing of an application for the issue of a C of A. It is in the applicant’s interest that such submission should be made at the time of application, or as soon as practicable thereafter.

26.10.2

(a) All aircraft:

(i) the Certificate of Registration

(ii) evidence that there is a local Type Certificate or Type Acceptance Certificate in force for the aircraft type and model;

(iii) evidence that the particular aircraft complies with the type design;

(iv) the logbooks or equivalent maintenance records for the aircraft;

(v) the current weight and balance report;

(vi) a copy of the Aircraft Flight Manual (AFM), if it is required by the regulations.

(b) Used aircraft:

(i) data listed in (a):and

(ii) the following data from the aircraft’s service history:

   a) total hours and flights of the aircraft and all life limited components;

   b) number of landings made, or if not available, a reliable estimate thereof;

   c) number of cabin pressurization cycles and the pressure differentials to which the cabin has been subjected during its life;

   d) statement describing the past operational uses of the aircraft, including any special mission roles and the approximate times in each role;
e) record of total hours and/or operating cycles, as appropriate, of all designated life-limited components of engines;

(f) record of all major structural and life-limited component changes such as those of wings, rotor blades, tailplanes etc., and the individual histories of such components unless new when fitted;

(g) record of all major structural repairs, and details of all salvage schemes, including the nature and cause of the damage in each case e.g. corrosion, cracking, lightning strike and accidental damage;

(h) record of all major repairs performed on manned balloons;

(c) **Aged aircraft:**

Special requirements may be imposed on used aircraft with MTOWs in excess of 5700 kilograms where the aircraft is older than 14 years from the date of manufacture. For such aircraft, data requirements are:

(i) data listed in (b) above;

(ii) details regarding previous operators of the aircraft, previous countries in which the aircraft has operated, and details of all structural repairs to the aircraft not carried out in accordance with the manufacturer’s approved data; and

(iii) a copy of the relevant Structural Inspection Document (USA FAA Advisory Circular No. 91-60 is relevant).

(d) **Imported aircraft:**

(i) data listed in (a), (b) or (c) as appropriate; and

(ii) one of the following documents:

a) a current export C of A for export to this state, or current C of A. An Export C of A should have been issued within 90 days and 50 hours flight time at the date of application for the C of A; or

b) if neither of the above is available, nor can be reasonably obtained, then a written statement from the aircraft manufacturer, or from a maintenance organization with an appropriate approval for aircraft maintenance for the type, that all applicable Airworthiness Directives (ADs) issued by the appropriate authority of the country of manufacture, or, for aircraft types certificated in this state as per 7.2 (c) above, that all applicable ADs issued by the authority of the recognized country that issued the type certificate (if this is not the country of manufacture), have been complied with, and that the aircraft conforms to Type Certificate requirements.;

(e) **Modified aircraft:**

A major modification is a change in the type design which has an appreciable effect on the weight, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the airworthiness of an aircraft, aircraft engine or propeller, but not so appreciable as to necessitate a change to the Type Certificate. The major modification may be incorporated as a Supplemental Type Certificate (STC). This is discussed in paragraph x of this document. For aircraft incorporating
major modifications, the data requirements are:

(i) data as listed in the applicable paras (a) to (e) above; and

(ii) written evidence that the modifications were incorporated in accordance with approved data:

   a. manufacturer’s data approved by a recognized authority; or
   
   b. data approved by a recognized authority in the country of manufacture; or
   
   c. data approved by an appropriate locally authorized person;

26.11 THE AIRCRAFT INSPECTION

26.11.1 As well as carrying out detailed documentary checks on the data and documentation provided as per the above paragraph, the AWI should carry out a physical inspection of the aircraft or be satisfied that the aircraft has been inspected and conforms to the type design, and is in a safe condition for flight.

26.11.2 The applicant should be made aware that the aircraft should be made available at a time and place mutually agreed to between the AWI and the applicant.

26.11.3 The physical inspection involves the completion of detailed checklists, and encompasses:

   (a) inspection of structure, systems and engines, to the extent considered necessary to verify the aircraft is in a safe condition for flight, and to correlate physical aspects with the aircraft’s documentation. The inspector will arrange provision of inspecting aids and checklists, but the applicant will be responsible for providing internal access to structure and systems if this is beyond the inspector’s scope using his or her limited resources;

   (b) checking the correctness of registration markings and fireproof plate;

   (c) correlation of aircraft data plate details with documentation;

   (d) ensuring all placards as called up by the AFM, Maintenance Manual and/or ADs are correctly positioned, formatted and legible;

   (e) ensuring the role equipment is correctly installed; and

   (f) operational equipment as required by the aircraft’s intended role e.g. instrumentation, communication and navigation equipment, oxygen provisions, survival equipment etc. is correctly installed.

26.11.4 Formal non-compliance documents are not raised during the inspection process. Rather, the AWI will continue a dialogue with the applicant in this regard, advising him or her of deficiencies if and as they are discovered, and advising the applicant in regard to the need for rectification. Non-compliances may be pursued in different ways:

   (a) rectified before the C of A can be issued;

   (b) the applicant accepting operational restrictions on the aircraft for subsequent use (see paragraph xx of this document);
26.11.5 Some overseas regulatory authorities require a test flight (often referred to as a full maintenance test flight) as part of the C of A issue procedure. However, the need for some particular form of check test flight may arise during the course of the C of A aircraft inspection process e.g. to investigate apparent design non-compliances, or the nature of defects, which cannot be resolved by ground inspection alone.

26.11.6 Once the aircraft and document inspections by the AWI have been satisfactorily completed and any flight test satisfactorily completed, then that person completes the process and the C of A is issued to the applicant.

26.12. MULTIPLE AIRWORTHINESS CERTIFICATION

26.12.1 If this has been applied for as per paragraph 6.4.2(g), for example in regard to the restricted category multiple certification, then the AWI will have ensured that all the requirements for restricted category operation were checked during the C of A inspection, as well as ensuring the conversion from one category to the other by removing or adding equipment can be undertaken using simple mechanical means. The applicant may have to perform demonstrations in this respect to the satisfaction of the AWI.

26.12.2 This sub-process will be completed when the Special C of A in the restricted category is issued concurrently with the standard C of A. A similar process applies for other multiple airworthiness certifications.

26.13 CONDITIONS APPLIED TO A CERTIFICATE OF AIRWORTHINESS

The authority is permitted under the regulations to place any condition on the issue of a C of A considered necessary in the interests of aviation safety. This may include operational limitations. Any condition will be in writing, attached to the C of A.

The AWI will, as a matter of course, fully discuss all proposed C of A conditions with the applicant prior to issue of the C of A. The aircraft must be subsequently operated and/or maintained under the terms of the C of A conditions.


26.14.1 Duration

Some states do not require that standard C of As be renewed on a periodic basis, although the C of A can be issued for a specific period. However the prevailing philosophy is to ensure ongoing airworthiness of aircraft through prescribed maintenance requirements, surveillance and other continuing airworthiness controls.

26.14.2 Transfer

A C of A is transferred with the aircraft as the C of A is issued to the particular aircraft. Thus the C of R holder may change, but this does not invalidate the C of A. However, a C of A ceases to be in force if the aircraft ceases to be registered in this state.
26.14.3 Cancellation/Suspension

The authority has the power to suspend or cancel a C of A. Such action should be through written notice to the holder of the C of A, who is normally the C of R holder. Such action will be taken if maintenance on the aircraft is not carried out in accordance with the CARs, and/or, in the case of regular public transport aircraft, if type certification support, in the sense of continuing airworthiness obligations, ceases from an overseas source. If the authority otherwise considers cancellation/suspension action is warranted in the interests of safety, then it may also suspend or cancel the C of A.

A suspension of a C of A will be lifted on a date prescribed by the authority.

If a C of A has been cancelled, either through action as per (a) above, or after an aircraft ceases to be on the register, then a new C of A will be required.

26.14.4 Variation

If a condition on a C of A is to be varied by the authority, then the C of A will be re-issued.

26.14.5 Surrender

If a C of A stops being in force, expires or is suspended or cancelled, the holder of the C of A must surrender it to the authority, on written request from the authority.

26.15 OVERSEAS ISSUE OF AN CERTIFICATE OF AIRWORTHINESS

26.15.1 The authority normally reserves the right to refuse a request to assess an aircraft overseas.

26.15.2 Some authorities do not issue C of A overseas, for the following reasons:

(a) diversion of limited authority resources for the additional travel time involved;
(b) the administration of tasks normally carried out by persons whose qualification privileges do not extend to work carried outside of this state e.g. the issue of a maintenance release;
(c) the degree of preparation prior to departure, necessary for the C of A documentation;
(d) the management and administrative tasks associated with overseas travel, including the recovery of associated costs.

26.15.3 The applicant must make a written, justifiable request to the Airworthiness District Office that will be issuing the C of A, providing:

(a) the reasons (justification) for the request;
(b) details of the location of the aircraft;
(c) details of the maintenance organization that will be performing maintenance on the aircraft.
(d) aircraft type and model;
26.15.4 It is normal for the applicant to acknowledge in writing that he or she accepts the principle of full cost recovery, including travel and accommodation costs. These costs should be in addition to the C of A issue fees.

26.15.5 In the case of FOT/FOM aircraft where automatic acceptance is involved, the Type Acceptance Certificate must have been issued by the authority prior to the AWI’s departure.

26.15.6 Where a full design validation exercise has been involved for a FOT/FOM aircraft prior to issue of the Type Certificate, then the C of A issue exercise overseas may not immediately follow the Authority team design validation visit, for the following reasons:

(a) there are invariably registration and contractual problems which delay immediate C of A issue;
(b) the manufacturer is forced to accelerate the processing of modifications and flight manual amendments to a degree inconsistent with safe and proper administrative and airworthiness control;
(c) the regulatory authority in the country of origin may be pressured to rush its approval and endorsement procedures to the detriment of other established programs and priorities.

26.16. SUPPLEMENTAL TYPE CERTIFICATES

26.16.1 A STC formally identifies a major modification normally carried out on an aircraft by a party other than the type certificate holder, and is supported by an approved data package.

26.16.2 A STC incorporated into an aircraft for which C of A issue is required will fall into one of three groups:

(a) an STC of local design, approved by the authority;
(b) a foreign STC which has been previously accepted by the authority; or issued by an authority of a recognized country and automatically accepted;
(c) STCs which have not been approved or accepted by the authority as per (a) and (b) above.

26.16.3 An STC must be applicable to the particular aircraft by serial number and be in accordance with the Type Certificate or Type Acceptance Certificate certification basis.

26.16.4 In the case of 14.2(c) above, it will be the responsibility of the applicant to furnish to the authority the design data package for the STC, so that the authority technical specialists may carry out a design validation. The package required, consisting of drawings, test reports, flight manual supplement (if required) etc., is that lodged by the STC holder to the regulatory authority which issued the STC. Applicants must be aware that the prime aircraft manufacturer and any overseas regulatory authority involved are under no obligation to, and indeed may be precluded from, supplying the STC data package. The applicant will have to negotiate with the STC holder, and this often takes time; the STC holder will normally charge for provision of the data. Costs are the applicant’s responsibility.
Finally, a physical inspection, as part of the overall C of A issue inspection, of the STC as fitted to the specific aircraft, may be required in order to establish conformity of the STC. However, the aircraft documentation should be checked that the continuing airworthiness and maintenance requirements are adequately addressed.

**26.17 ASSOCIATED MATTERS**

26.17.1 The following matters are associated with C of A exercises. In some countries, these are integral with C of A application/issue procedures, and this has introduced confusion for some applicants seeking a C of A.

26.17.2 **Noise certification**

Noise certification for individual aircraft is required before the aircraft can legally be operated in some countries. Aircraft noise is regulated through the regulations. Noise certification or lack of such has no legal impact on type approval, or individual C of A issue. However, if an individual aircraft does not meet the noise requirements, then it may be illegal for that aircraft to operate in some countries, even though the aircraft may have a valid C of A.

26.17.3 **Maintenance release**

A maintenance release is not issued prior to C of A issue. However, an aircraft operating on a standard C of A cannot legally fly until a maintenance release has been issued and is in force.

**26.18 Procedure for Validation of Certificate of Airworthiness**

**General**

ICAO Annex 8 requires that when a State of Registry renders valid a Certificate of Airworthiness issued by another Contracting State it shall provide a suitable Validated Certificate of Airworthiness (Form B.2.3 Appendix-III) to be carried with the original Certificate of Airworthiness.

The Director General shall have the power to validate Certificate of Airworthiness issued by another contracting State on application made by the owner or operator of such aircraft.

When CAA Nepal renders to valid the Certificate of Airworthiness issued by another Contracting State it is, by its action, certifying that it is satisfied that the certificate was issued in compliance in all respects with the convention and the provisions of the applicable Annexes and NCAR Chapter B.2 "Certificate of Airworthiness". Furthermore, as the new State of Registry CAA Nepal, is henceforth responsible for ensuring the continuing airworthiness and safe operation of the aircraft.

**PROCEDURE**

a) Check that the application Form B.2.1 (Appendix-1) is signed by authorized personnel (QA chief, Engineering Director or equivalent post holders).

b) Verify the Certificate of Airworthiness Issued by contracting state is included along with the application Form.

c) Ensure the Certificate of Airworthiness issued by contracting state is Valid.
d) Ensure the applicant has submitted the following documents,
i. it is registered in Nepal in accordance with Chapter B.5.
ii. a Nepalese Type Certificate for the type concerned has been issued in accordance with Chapter B.1.
iii. an Export Certificate of Airworthiness issued by the previous State of Registry not more than 30 days before the date of export is submitted to the Director General, or, if the State from which the aircraft is imported does not issue Export Certificate of Airworthiness, it is confirmed that a Certificate of Airworthiness issued by that State was in force immediately prior to the export,
iv. the owner or operator has deposited the data specified in paragraph 2.2 with the Airworthiness Inspection Division,
v. logbooks and other records showing the complete maintenance and modification history of the aircraft and aircraft components prior to importation are submitted, and,
vi. a confirmation inspection including ground and flight tests as deemed necessary has confirmed that the aircraft confirms to the approved type design or to approved modifications of that design.

vii. a Survey Inspection made by the Airworthiness Inspection Division confirms that the aircraft is airworthy and that all applicable Airworthiness Directives of the State of Manufacture have been implemented.

viii. an aircraft is equipped with all the applicable operational derived equipment and Instruments, as per requirements laid down in current relevant Flight Operations Requirements.

e) Verify the owner or operator of a new aircraft/used Aircraft for which a Validated Certificate of Airworthiness is required proves the following data:

i. A list of documents which identifies all technical publications of the State of Manufacture and manufacturers of aircraft, engine and vendor component (where ever possible) as well as one copy of such publications in English to support the continuing airworthiness of aircraft.

ii. Written confirmation from the State of Manufacture and from the manufacturers of the aircraft, engine and vendor component (where ever possible) that they will continue to supply any amendments for reissues of the above technical publications as long as the aircraft type remains on the Nepalese Register.

iii. Two copies of the proposed Flight Manual compiled in accordance with Chapter E.4.

iv. Two copies of the proposed Maintenance Schedule compiled in accordance with Chapter C.4.

v. Two copies of the proposed Standard Flight Test Schedule compiled in accordance with Chapter C.8.

vi. Two copies of Operator’s Minimum Equipment List compiled in accordance with Chapter E.8.
vii. Aircraft Component Status Report giving all controlling intervals whether recorded as flight time, landings, flight cycles, time since new, time since overhaul or by other intervals,

viii. Seating configuration approved document where appropriate (for Transport Category - Passenger),

ix. In case of twin engine aircraft - certification for ETOPs operation, if any.

x. The applicant's request for the issuance of Mobile Radio Station Licence with a list of radio communication, navigation and radar equipments installed, including make, model, and their operating frequencies,

xi. The particulars and result of a airworthiness acceptance flight test,

xii. A copy of voucher against the payment of required fee for the issuance of Certificate of Airworthiness for a new imported aircraft.

xiii. a certificate be issued by the Chief of Quality Assurance stating that no modification / Airworthiness Directive / inspection is due,

xiv. a Certificate of Compliance be issued by an appropriately licensed / approved person for the assembly work in case the aircraft was imported in a dismantled condition,

xv. the aircraft be weighed and a copy of the Weight and Balance Report be submitted to the Airworthiness Division,

xvi. has paid the prescribed fee.

f) Fill the Checklist for C of A Issue/Renewal/Validation

g) Initiate a Memo to Superior Officer

h) After Approval from Director General, Issue validated Certificate of Airworthiness in a Format prescribed in NCAR Chapter B.2 Form B.2.3 (Appendix-3) and Issue a letter stating the CAA Nepal has validated the certificate of Airworthiness issued by another Contracting State

The validated Certificate of Airworthiness shall not extend beyond the period of validity of the original Certificate of Airworthiness. However, whenever the period of validity of the original Certificate of Airworthiness is renewed, the Validated Certificate of Airworthiness may be renewed or another Validated Certificate of Airworthiness is issued by the State of Registry for a period not exceeding the period of validity of the original Certificate of Airworthiness.

The validated Certificate of Airworthiness should be carried with the original Certificate of Airworthiness issued by the previous state of registry.
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Chapter 27
Air Operator Certification
Section 1
Pre-application and Application

THE CERTIFICATION PROCESS

The certification process which will be followed by the Civil Aviation Authority of Nepal for the initial issuance of an Air Operator's Certificate (AOC) is divided into the following steps:

- Pre-application
- Formal application
- Preliminary financial, economic, and legal assessment of the application
- Preliminary technical assessment of the application including document review
- Operational inspections
- Decision on application and award of AOC and operations specifications (or equivalent document)

Information concerning the first two steps follows in this chapter. Information concerning the remaining steps is contained in subsequent chapters to this volume.

PRE-APPLICATION PHASE

This step includes all of the preliminary contact with the prospective operator prior to the submission of a formal application. During this time, the Civil Aviation Authority of Nepal will make the potential operator aware of the regulatory requirements which must be met in order to obtain an AOC and of the exact steps in the certification process which must be accomplished before the AOC may be issued. It is essential that the applicant has a clear understanding of the form, content, and documents required for the formal application. To this end, Appendix A to this volume Information for Prospective Applicants for an Air Operator Certificate, which describes the process in detail, will be provided to the potential applicant.

FORMAL APPLICATION

The formal application will consist of a letter to the Director General, Civil Aviation Authority of Nepal containing the following information:

A. The name and address of the applicant and the main base of the proposed operations;
B. Description of the applicant's business organization, corporate structure, and names and addresses of those entities and individuals having a major financial interest;
C. Information on management organization and key staff members, including their title, name, background, qualifications and experience;
D. Detailed information on flight operations under the following headings:
1. Type of aircraft, communication and navigation equipment, instruments, equipment and flight documents to be used;

2. State of Registry of the aircraft - if foreign registered a copy of the lease agreement should be provided;

3. Data concerning each flight crew member including types of certificates or license number, ratings, medical certificate and evidence of currency in assigned aircraft;

4. Arrangements for crew and ground personnel training and qualification;

5. Installations and equipment available;

6. Proposed routes, including geographical tracks, minimum flight altitudes, destination and alternate aerodromes to be used including data on instrument approach procedures, proposed aerodrome operating minima, navigation and communications facilities;

7. Details of operational control and supervision methods to be used; and Nature of operations - passenger/cargo/mail, day, night, VFR or IFR, etc.

8. Arrangements for maintenance and inspection of aircraft and associated equipment;

E. The following specific maintenance documents should be supplied (*as applicable to the operation)

1. Operator's Maintenance Manual (OMM). (This manual may be combined with the Operations Manual for certain operators.)

2. Continuous Airworthiness Maintenance Program/Manuals

3. Weight and Balance Procedures


5. Minimum Equipment List (MEL)

6. Configuration Deviation List (CDL, if published)

7. Maintenance Reliability Program (*optional for operators having less than three aircraft of the same type)

8. Continuous Analysis and Surveillance System (*required for 10 or more passengers under some rules)

F. detailed description of how the applicant intends to show compliance with each provision of the applicable code of the Civil Aviation Act/rules;

G. specified financial data; and

H. desired date for operation to commence.
Section 2

Preliminary Assessment of the Application

GENERAL

The importance of a thorough and careful preliminary assessment of the application cannot be overemphasized. The more thoroughly the applicant's competence is established at the initial stage, the less will be the likelihood of having serious problems in the operational inspection phase or during the course of subsequent operations. Such an assessment is essential at an early stage to reveal any critical deficiencies in the applicant's proposals and enable the operator to prepare alternative proposals. If deficiencies are found which are such that they can be rectified, the applicant should be given a reasonable opportunity to do so; otherwise the application should be rejected.

This preliminary assessment consists of two phases:

- Financial, economic and legal assessment
- Technical assessment/Document review

PRELIMINARY FINANCIAL, ECONOMIC, AND LEGAL ASSESSMENT

In assessing the application prior to a detailed operational inspection it will be necessary for the Airworthiness Inspector to make a preliminary investigation with total satisfaction that the applicant has:

- sufficient financial resources;
- a route structure for the proposed operation;
- an intended level of service that meets a need or demand and is in the public interest;
- proposed a type and level of operation that is in accord with bilateral or multi-lateral air transport agreements relating to traffic rights, frequencies, capacity, routes, etc., to which the State is a party;
- presented traffic studies or other data indicating that the proposed operation should be economically successful; and
- management structure and suitable personnel, equipment, facilities, manuals, buildings, service agreements, etc., or will be able to obtain them.

Frequently, the financial viability of the operation is the critical factor in reaching a decision as to whether an AOC should be awarded. Sufficient financial resources must be available to the operator so that the operator is able to obtain all required equipment, facilities and manpower and be able to fully support operations in the early stages when revenues are difficult to predict and may in any case be very low. Marginal or severely limited resources frequently result in an adverse effect on safety and efficiency. Experience indicates that operators may tend to short cut such vital matters as required maintenance, acquiring adequate spare parts, training of personnel and other similar matters with safety implications. The determination of financial resources of the applicant is usually based on an audit of the operator's assets and liabilities and a thorough evaluation of financial and
statistical records and other pertinent data such as proposed arrangements for the purchase or lease of aircraft and major equipment.

In recent years the leasing of aircraft with or without flight crew or cabin crew has come into widespread use on an international basis. Thus, in many instances the lease will involve aircraft on the register of one state leased to an operator having the nationality of another state. Unless suitable arrangements are made by the State of Registry and the State of the Operator, complex legal problems as well as safety problems, particularly in respect of the continuing airworthiness and operations supervision, may result. Consequently, the assessment of any proposed leasing arrangements should be carried out in detail. The overall subject of lease and interchange of aircraft is discussed in Volume 2 Chapter 12 of this manual. If the proposed operation is not considered to be viable in respect of the financial, economic and legal factors, further action should be suspended until it is determined whether the deficiencies can be rectified.

PRELIMINARY TECHNICAL ASSESSMENT - DOCUMENT REVIEW

After the Civil Aviation Authority of Nepal has determined that the proposed operation meets the necessary financial, economic, and legal criteria enumerated in the preceding chapter, a preliminary technical assessment of the operation will be undertaken. Before this assessment can commence, the operator will be required to submit to the Civil Aviation Authority of Nepal the following documents or their equivalent(s):

- Aircraft Flight Manual(s)
- Operations Manual
- Flight Attendant Manual
- Minimum Equipment Lists and Configuration Deviation Lists (if published)
- Flight Operations Officer or Dispatcher Manual
- Weight and Balance Manual
- Route Manual
- Training Manual
- Dangerous Goods Manual
- Operator’s Maintenance Manual (OMM). This manual may be combined with the Operator’s Manual for certain operators.
- Continuous Airworthiness Maintenance Program/Manuals
- Maintenance Training Program/Manual
- Maintenance Reliability Program (*optional for operators having less than three small aircrafts of the same type)
- Continuous Analysis and Surveillance System (*required for 10 or more passengers under some rules)

Note: A brief description of the purpose and content of the above manuals, along with guidance for
evaluating the content of the Operator’s Maintenance Manual is contained Volume 2 Chapter 19.

It must be emphasized that the Company manual or manuals must be sufficiently detailed to provide a comprehensive account of practically every aspect of the operator’s organization, policies, and procedures. The primary focus of the preliminary technical assessment will be upon the information provided by the prospective operator in these manuals. However, it will be necessary for Airworthiness Inspectors to meet regularly with appropriate applicant officials in order to:

- Become fully informed concerning the nature and extent of the proposed operation, the types of aircraft to be utilized, the organizational structure, management philosophy, established lines of Civil Aviation Authority of Nepal and the duties and responsibilities of key personnel;
- Develop a firm understanding regarding the applicant’s proposed maintenance and inspection programme for aircraft and related equipment;
- Develop a firm understanding of the applicant’s proposed system for establishing and maintaining all required company operational, maintenance and personnel records;
- Confirm the various phases of the applicant’s ground school, maintenance, and flight training programmes in order to make a general assessment of their adequacy and conformity with the Civil Aviation Authority of Nepal policies relative to training;

Based upon a preliminary review of the content of the operator’s manual system, the information contained in the application, and additional information obtained during meetings with appropriate operator’s officials, the Civil Aviation Authority of Nepal must make the following general determinations:

A. The applicant has aircraft which are suitable for the proposed operation. In this regard the following questions should be considered:

1. Are the aircraft to be operated at realistic power settings and speeds?
2. Is the aircraft's operating mass likely to be critical for the proposed operation?
3. Are operating flight levels, stage lengths and aerodrome dimensions within the aircraft’s performance capability?
4. Can the aircraft be properly maintained, inspected and supported with the available maintenance and spare parts resources?
5. Are the aircraft suitably instrumented and equipped for the proposed operation?

B. The applicant has the potential overall ability to conduct the proposed operation. In this regard the following questions should be considered:

1. Can the operation as outlined, be safely executed with the resources available?
2. Is the flight crew establishment sufficient to enable the proposed operation to be carried out without infringement of flight or duty time limitations?
3. Is the requirement for aircraft utilization reasonable?
4. Does the plan of operations permit compliance with aircraft maintenance schedules?

C. Selected routes or areas of operation and minimum flight altitudes can be navigated safely with the navigation equipment available;

D. The applicant has a full appreciation for the responsibilities under the regulatory requirements including the obligations as a potential holder of an AOC;

E. The applicant has an overall fitness to safely conduct the proposed operation; this should include a comprehensive review of the background of the individuals who hold responsible positions in management or any position of significant control over the applicant’s activities. As a minimum, the background and qualifications of the Directors or board members and management and executive staff should be evaluated;

F. There are provisions for the establishment of an accident prevention and flight safety programme.

G. The company’s organizational structure and management practices and philosophy are adequately described so as to enable all employees to carry out their duties safely and in a standardized manner; in conjunction with the above, during the course of the preliminary technical assessment, the Civil Aviation Authority of Nepal will:

A. advise and counsel appropriate applicant personnel regarding problems and questions that arise concerning certification procedures and requirements, including explanations concerning Civil Aviation Authority of Nepal regulations and accepted methods of compliance;

B. explain to the applicant the type of AOC that is contemplated, the significance of any limitations that may be prescribed and the operations specifications that will be issued in conjunction with the AOC;

C. confirm, in a letter addressed to the applicant, any commitments made or serious difficulties noted during the course of the preliminary assessment;

When the preliminary assessment is completed, the Civil Aviation Authority of Nepal should be in possession of sufficient information to determine, with a reasonable degree of certainty, the ability of the applicant to satisfactorily conduct the proposed operation. If the assessment is favorable, the applicant should be encouraged to proceed with its plans with the assurance that an AOC will be issued subject to satisfactory completion of the compliance statement and operational inspection.

**SCHEDULE OF EVENTS**

The Schedule of Events is prepared by the applicant.

The Schedule of Events is a list of events and activities that must be concluded, and aircraft and/or facilities that must be available to the applicant, and the dates on which any inspection items will be ready for inspection by the Civil Aviation Authority of Nepal. The list should include, but is not limited to, the following items.
1. Dates when crew members will begin:
   - Basic indoctrination training; and
   - Aircraft systems training; and
   - Simulator training; and
   - Aircraft flight training; and
   - Flight attendant training

2. Dates when Civil Aviation Authority of Nepal staff commence training, if applicable

3. Dates when maintenance personnel training will begin

4. Dates when maintenance facilities will be ready for Civil Aviation Authority of Nepal inspection

5. Dates when each of the required manuals will be available for assessment

6. Dates when aircraft will be ready for inspection

7. Date of emergency evacuation and ditching demonstrations

8. Date when terminal facilities will be ready for inspection

9. Date when proving flights will begin

10. Date when proposed operations will begin

11. Date of proposed assessment of head of training and checking and other approved persons.

The Schedule of Events will enable the project teams to plan workloads so as to achieve certification by the required date. Each team should examine the Schedule of Events to determine manpower requirements. Where resources are inadequate, it will be necessary to re-negotiate the schedule with the applicant. Flight Operations Inspectors should examine the schedule to check for possible conflicts (for example, a proving flight scheduled before the Flight Operations Inspector has completed his or her type-specialist training, or before the destination terminal facilities are ready), and negotiate changes immediately with the applicant.

Once the Civil Aviation Authority of Nepal has accepted the Schedule of Events at the formal application meeting, every effort should be made to keep to the schedule, provided safety aspects are not compromised. The Project Manager must ensure that adequate team members are available to meet the schedule.

Since all required manuals must be reviewed and accepted or approved, the Schedule of Events must allow sufficient time to accomplish these tasks prior to the beginning of proving tests. The timing of other events, such as training, aircraft conformity checks, emergency evacuation demonstrations, should also be assessed to determine the reasonableness of the schedule. It may be necessary to advise the applicant that the proposed schedule is unrealistic and that additional time will be required to accomplish the required reviews and inspections. This will normally be done at the formal application meeting.
The applicant must be advised that any deficiencies found during the review of the manuals and other documents will require their return for re-drafting. Such action could cause delays in the certification process and this may ultimately affect the Schedule of Events. Failure by the applicant to meet proposed dates on the Schedule of Events and/or unsatisfactory inspections and demonstrations could also result in delays in the certification process. The applicant should be cautioned against premature advertising of the commencement date of operations. Under the Civil Aviation Act, the Civil Aviation Authority of Nepal must not issue an AOC unless they are satisfied that the requirements of the Act have been met.

The time required to train Inspectors must be considered when accepting the Schedule of Events. Should the Civil Aviation Authority of Nepal not have staff qualified on the specific type of aircraft, then the training of at least one Flight Operations Inspector and two Airworthiness Inspectors will be required. The review of Operations Manuals and Operator's Maintenance Manuals cannot be completed until Civil Aviation Authority of Nepal Inspection personnel are qualified. Surveillance of crew training, which is required before proving flights commence, will also require qualified Civil Aviation Authority of Nepal personnel.

The applicant should also be advised that non-compliance can be resolved by the granting of exemptions only where legislation allows for such exemptions. Applicants may seek short-term exemptions, without demonstrating ‘equivalent safety’, in order to commence operations at the planned date, with a proposal that compliance will be achieved at a later date. Such exemptions cannot be granted, since the Act requires the Civil Aviation Authority of Nepal to be satisfied, prior to issuing the certificate, that the applicant has, at the commencement of operations, complied with, or has the capability to comply with, all of the provisions of the Act, and the Rules that relate to safety.

COMPLIANCE STATEMENT

The Act requires that the Civil Aviation Authority of Nepal is satisfied that the applicant has complied with, or is capable of complying with, the provisions of the Act, Rules that relate to safety. The compliance statement is a tool for the applicant to construct a document that provides sufficient detail to convince the Civil Aviation Authority of Nepal that he/she both understands the requirements and has put in place the appropriate instructions, procedures and practices to ensure compliance. A properly prepared compliance statement is of benefit to the applicant both directly and indirectly. It provides a system for both the applicant and the Civil Aviation Authority of Nepal to ensure that their obligations under the Act are completely discharged.

The Compliance Statement should be in the form of a list of provisions of the Act, and Rules and those sections of AOC Manual that will be applicable to the proposed operation. The listing should be in sufficient detail to make reference to applicable provisions of the Act or Rules. Next to each item the applicant must provide a brief narrative description of the means of compliance or a reference to a specific section of a manual or other document which shows the manner of compliance.

If the method of compliance has not been fully developed, the applicant should provide a brief statement indicating his or her intent. It is expected that an adequately prepared
applicant will have considered in detail how he or she proposes to comply with all regulatory requirements, and consequently there should be few, if any, areas in which the applicant is unable to put forward precise information.

The Compliance Statement should be reviewed to confirm that the applicant has a clear understanding of the legislative requirements applicable to the proposed operation. The manner in which the applicant describes compliance with the specific legislation should be reviewed for adequacy, and any deficiencies discussed with the applicant. Where it is possible and reasonable to specify a particular means of complying with legislation, the applicant is expected to do so by including this in the Operations Manual, or other document, and provide a reference in the Compliance Statement.

In some cases it will be sufficient for the applicant to state “The Board is aware of this limitation” or “The Company acknowledges this requirement” or similar words according to the particular case. An example of such a case may be the Rules which require the nationality mark and registration marks of the aircraft to be permanently affixed and kept clean and visible at all times.

Section 3 Airworthiness Inspections

GENERAL

The preliminary assessment of the application, as described in the preceding chapter, should provide the Civil Aviation Authority of Nepal with a general appreciation of the scope of the proposed operation and the potential ability of the applicant to conduct it. However, before authorizing the issuance of the AOC, the Civil Aviation Authority of Nepal will need to investigate thoroughly the operating ability of the applicant. This important and relatively more detailed phase of the investigation will require the applicant to demonstrate through day-to-day administration and operations, including in some cases a series of proving flights over the proposed routes, the adequacy of facilities, equipment, operating procedures and practices, and the competence of administrative, flight and ground personnel.

Airworthiness inspections and required demonstrations will normally be conducted in the following sequence:

a. Organizational Structure/Management Evaluation
b. Maintenance Management
c. Records Inspection
d. Line Station Facility Inspection
e. Main Base Facility Inspection
f. Training Program Inspection
g. Operator’s Maintenance Manual Review
h. Proving Flights including Line Stations

Detailed information regarding the conduct of these inspections and demonstrations is contained in the sections which follow.
ORGANIZATIONAL STRUCTURE AND MANAGEMENT EVALUATION

The applicant's organizational structure, managerial style, direction and philosophy must be further evaluated to ensure that necessary and proper control is exercised over the proposed operation and the personnel involved. The preliminary assessment of this area which was conducted in accordance with the preceding chapter mainly ensured that these organizational elements were clearly spelled out in the operator's manuals and instructions. During the airworthiness inspection portion of the approval process, the inspector will have the opportunity to verify that these written policies are fully understood and implemented throughout the organization.

Through discussions with key management personnel and observations, the inspectors must determine whether clear lines of Civil Aviation Authority of Nepal and specific duties and responsibilities of subordinate elements and individuals are established. These duties and responsibilities must be clearly outlined in the applicant's operations and maintenance manuals and other Company documents, and it should also be determined that acceptable procedures are established, and followed, for conveying such Company procedures and operating instructions to keep affected personnel currently informed. The authorities, tasks, responsibilities and relationships of each key position must be clearly understood and followed by individuals occupying these positions.

The applicant's staffing must be investigated to determine whether an adequate number of personnel are employed at the executive and other levels to perform necessary functions. The number and nature of personnel will vary with the size and complexity of the organizations. Through a sampling questioning process, the Civil Aviation Authority of Nepal inspector must make a finding that management personnel are qualified, experienced and competent to perform their assigned duties.

At all levels applicant personnel must be thoroughly integrated into the operation and be made fully aware of the channels of communication to be used in the course of their work and of the limits of their Civil Aviation Authority of Nepal and responsibility.

MAINTENANCE MANAGEMENT

Personnel responsible for the inspection and maintenance organizations should possess the qualifications required by Director General. If an operator/applicant elects to contract out all maintenance, the positions defined above are still required. The positions that are required include the following:

- The Director of Maintenance (or equivalent), responsible for administering the operator/applicant's maintenance program
- The Chief Inspector/Quality Manager (may not be required for some small aircraft operations) responsible for administering the operator/applicant's inspection program

Consolidated Positions

Depending upon the needs of the maintenance organization, management positions may be consolidated with other positions. When management positions are consolidated, the individual serving in the consolidated position must meet the qualifications of both positions.
Before allowing an individual to serve as Director of Maintenance or Chief Inspector, consideration must be given to other duties performed by that person. For example, if that person also plans to serve as a flight crew member, the Airworthiness Inspector (AWI) must ensure those duties will not interfere with the responsibilities as Director of Maintenance or Chief Inspector.

Separation of Maintenance QC & QA Functions

A Chief Inspector/Quality manager is required for large aircraft operators but may not be required for light aircraft operator/applicants. Large aircraft operators should have a maintenance organization that ensures separation of Production and Quality Departments within the organisation.

For light aircraft operators/applicants, a Director of Maintenance (or equivalent) is necessary to ensure separation of inspection and maintenance functions. The Director of Maintenance serves as administrative controller with overall responsibility for separating inspections and maintenance functions.

Part Time and Full Time Positions

Although large aircraft operator/applicants should have full time management personnel, light aircraft operators may use part time personnel. Both full time and part time maintenance management personnel must have the necessary pre-requisite qualifications to fulfill the responsibilities of the position.

The AWI should determine if the light aircraft operator/applicant will use part time management personnel. Each person employed on a part time basis must be readily available to fulfill all responsibilities of the position consistent with the maintenance organisation's operations.

Deviations - The Director General may authorize a deviation of management personnel. A request for deviation should be processed as follows:

(1) The operator/applicant's request should be submitted to the Director General and should contain the following information:

(a) The type and number of aircraft operated and the maintenance program(s) utilized by the certificate holder

(b) A resume of the individual for whom the deviation is requested, including:

- Dates of experience
- Types of aircraft
- Specific areas of experience
- Aeronautical experience
- Types of management positions previously held
- AMT licence number
- The dates the certificate and each rating were issued
(2) The senior AWI must review the information:

(a) The individual involved should be interviewed to verify aeronautical experience and qualifications.

(b) The person’s AMT certificate should be verified through central records to verify the dates of original issuance and added ratings.

(c) The results of the data review, interview, and the AWI’s recommendation or denial will be included in the submission to the director.

NOTE: Deviations may be granted from the minimum experience requirements. It is essential, however, that appropriate certificates and ratings be held.

RECORDS INSPECTIONS

A. Review the applicant’s Operator’s Maintenance Manual

(1) Ensure that the necessary procedures exist in the applicant’s manual to ensure a suitable system for creating, preserving and retrieving required records.

(2) Ensure that all records will contain the following information, as applicable:

Description of the work performed (or reference to data acceptable to the Director General)

Name of the person(s) performing the work when the personnel are not employed by the applicant’s organization

Name or other positive identification of the individual approving the work

B. Review the applicant’s Manual’s Procedures. Review the applicant’s record keeping procedures to ensure that the requirements are met for the following:

(1) Airworthiness Release Records. Ensure the following:

(a) Airworthiness release records will be retained for one year after the work is performed or until the work is repeated or superseded.

(b) The applicant’s manual identifies the person(s) authorized to sign an airworthiness release.

(2) Flight Maintenance Records. Ensure that procedures provide for the following entries:

Flight discrepancies to be entered at the end of each flight
Corrective actions and sign-off, per manual procedures
Minimum Equipment List (MEL) deferment per the manual procedures

(3) Total Time In Service Records

(a) Evaluate the method of recording total time in service of airframes. This record must show the current time in service in hours.

(b) Ensure that procedures are in place to retain the records until the aircraft is sold and that the records will then be transferred with the aircraft.
(4) Life-Limited Parts Status

(a) Ensure that the applicant has procedures for tracking the current status of life-limited parts for each airframe, engine, propeller, rotor, and appliance, to include the following information:

- Total operating hours (including calendar time)/cycles accumulated
- Life limit (total service life)
- Remaining time/cycles
- Modifications

(b) Ensure that procedures are in place to retain the records until the aircraft is sold and are then transferred with the aircraft.

(5) Time Since Last Overhaul Records. Ensure that the manual includes a method/procedure for updating this document from the overhaul records and ensuring that this document accompanies the aircraft upon sale.

(6) Overhaul Records

(a) Ensure that the manual describes how the applicant will document the last complete overhaul of each airframe, engine, propeller, rotor and appliance. The overhaul record should include the following information:

- Disassembly data
- Dimensional check data
- Replacement parts list
- Repair data
- Reassembly/test data
- Reference to data including overhaul specifications

(b) Ensure that these records will be retained until the work is superseded by work of equivalent scope and detail.

(7) Current Aircraft Inspection Status

(a) Evaluate the method the applicant will use to record the time in service since the last inspection.

(b) Determine if procedures ensure that these records are retained until the aircraft is sold and are then transferred with the aircraft.

(8) Airworthiness Directive (AD) Compliance. Evaluate how the applicant will comply with the record keeping requirements of the ADs. The procedures must generate a record that contains the following data:

(a) Current status. Ensure that the current status data will include the following:

A list of all ADs applicable to the aircraft
The date and time of compliance
The time and/or date of next required action (if a recurring AD)

(b) Method of compliance. Ensure that this data will include either a record of the work performed or a reference to the applicable section of the AD.

**NOTE:** This data must be retained until the aircraft is sold and transferred with the aircraft.

(9) Major Modification Records

(a) Evaluate the manual procedures to ensure that the applicant prepares and maintains a list of current major alterations to each airframe, engine, propeller, rotor, and appliance.

(b) Ensure that the list includes the following information:
   - The date of the alteration
   - A brief description of the alteration

(10) Major Repair Records. Evaluate the manual procedures to ensure that the applicant prepares and maintains a report of all major repairs to each airframe, engine, propeller, rotor, and component.

The record-keeping system will be inspected in more detail in accordance with Volume 2, Chapter 17 of this manual.

**LINE STATION FACILITY INSPECTIONS**

Each aerodrome which the operator intends to use must be inspected prior to the first revenue flight to that aerodrome, in order to ensure that the operator has the organization, facilities, and staffing to handle his aircraft at that destination. Station facility inspections may be accomplished during proving flights. However, if no proving flight is scheduled to a proposed operator destination, the Civil Aviation Authority of Nepal and the operator must make arrangements to travel to and inspect that facility by another means. Information on station facility inspections along with the appropriate checklist/report form is contained in Volume 2 Chapter 17 of this manual.

**MAIN BASE FACILITY INSPECTION**

A. Review the application for accuracy and from it determine ratings and location applied for. Also determine if any maintenance functions will be contracted out.

B. Evaluate Housing and Facilities. Inspect the following:

   (1) Housing and shop areas to ensure the following:

   (a) Adequate housing includes sufficient work space for maintenance functions to be accomplished

   (b) If requesting an airframe rating, that housing includes:

      - Suitable permanent housing for at least one of the heaviest aircraft within the weight class of the rating being sought
      - If climatic conditions allow, a permanent work dock that meets the requirements
of the regulations

(c) Proper storage and protection of:
- Materials
- Parts
- Supplies

(d) Proper identification and protection of parts and subassemblies during:
- Disassembly
- Cleaning
- Inspection
- Repair
- Modification
- Assembly

(e) Segregation of the following:
- Incompatible work areas, e.g., metal shop, battery charging area, or painting area next to an assembly area
- parts cleaning areas

(f) Proper ventilation, lighting, and temperature and humidity for the type and complexity of work being accomplished.

(2) Technical documents to ensure that documents:
- Are in compliance with NCAR
- Are appropriate for the maintenance to be performed
- Are current, accurate, and complete and in the maintenance organizations possession
- Are easily accessible to personnel
- Include a method to ensure revisions are made

(3) Equipment, tools, and test equipment, per rating sought, to ensure:

(a) Required types and quantities are available and under the control of the organisation

(b) All required items are serviceable and within calibration criteria, to include traceability to one of the following:
- The Standards contained in NCAR
- Standard established by the item’s manufacturer
- If foreign manufactured, the standards of the country where manufactured, if approved by the Director General
CIVIL AVIATION AUTHORITY OF NEPAL
AIRWORTHINESS INSPECTOR HANDBOOK

- A record keeping system of calibration results

**NOTE:** If the maintenance org. utilizes an engine test cell, it must be correlated to the manufacturer’s specifications.

C. Review Personnel list. Ensure that:

1. Personnel directly in charge of maintenance functions are appropriately licenced or approved by the Director General

2. The maintenance organization/applicant has sufficient number of supervisory and inspection personnel that lists at least one appropriately licensed mechanic in a supervisory position.

3. The maintenance organization/applicant’s staff list includes inspectors authorized to make final airworthiness determinations.

**NOTE:** In component repair shops, technical supervisory personnel may be licensed mechanics or otherwise approved mechanics, if appropriately experienced.

**TRAINING PROGRAMME INSPECTION**

Effective training is the basis for a successful maintenance/inspection program. Although many procedures for maintaining and inspecting aircraft may be similar, the equipment, procedures, and task documentation used may all be unique to the operator/applicant’s specific programs.

The states rules should require that maintenance/inspections be performed in accordance with the operator/applicant’s manual.

Maintenance/inspection training programs are the most efficient manner to inform personnel of the requirements of the operator/applicant’s program.

The training programme could be described in detail in the Operator’s Maintenance Manual or in a Training Manual, as part of the Operator’s Maintenance Manual but issued as a separate volume. The choice will generally depend upon the extent of the operation and the number and types of aircraft in the operator’s fleet. Most applicants find it convenient to set forth their training programmes in a Training Manual to facilitate easy applications and updating. Depending on the scope and complexity of the proposed operation the required training programmes may be carried out under the direct control of the applicant or conducted by other training facilities under contract to the applicant or a combination thereof. In this case, the applicant will be required to provide a comprehensive description of the contract training for approval by the Civil Aviation Authority of Nepal. In any event the Airworthiness Inspector will carry out a thorough analysis of all phases of the applicant’s training programmes. This analysis should permit a determination as to whether the training methods, syllabus, training aids/devices, training standards, related facilities and record keeping are adequate. The qualifications of personnel should be established as well as evaluation of their effectiveness.

For purposes of initial approval of training programmes for issuance of an AOC, the Civil Aviation Authority of Nepal may require the applicant to formalize in detail only those training courses which must be accomplished prior to the first revenue flight of the airline.
Other courses, may be fully developed after the commencement of regular operations and before heavy maintenance is required.

**EMERGENCY EVACUATION DEMONSTRATION**

In order to demonstrate that the airplane seating configuration, location and operation of emergency exits, and crew training and procedures will permit a successful evacuation of passengers in an emergency situation, the applicant will have to perform an emergency evacuation demonstration, prior to issuance of an AOC, for each aircraft type which he intends to operate. Procedures to be followed for these demonstrations may be found in Volume 2, Chapter 4 of this manual.

**PROVING FLIGHTS**

As a final demonstration that he has the proper organization, facilities, equipment, and training to successfully carry out revenue flights, the applicant will be required to perform a series of proving flights in accordance with the guidance contained in Volume 2, of this manual.
GENERAL

Properly conducted and documented, the assessment and inspection programme outlined in the foregoing chapters will enable the Civil Aviation Authority of Nepal to determine if the applicant has fulfilled all technical safety and regulatory requirements for the issuance of an AOC. The programme will have provided specific information related to:

A. the scope of the applicant’s proposed operation;
B. the adequacy of the organization and resources;
C. the adequacy and effectiveness of company policies, directives, operating instructions and procedures prescribed by the applicant to be followed by the personnel in the conduct of the operation; and
D. the applicant’s willingness and ability to implement the State’s operating regulations and rules applicable to the proposed operation.

It will also reveal any deficiencies related to the operation and provide opportunities during the assessment and inspection phases for the applicant to remedy any such deficiencies to the satisfaction of the Director General.

DETERMINATION ON THE APPLICATION

Following the completion of the assessment and inspection programme, the Airworthiness Inspectors will be in a position to recommend to the Director General that the applicant is either:

properly equipped and capable in all respects of conducting the proposed operation safely, efficiently and reliably in accordance with the AOC’s operations specifications or limitations; or

is not, or is not yet (pending correction of specified deficiencies), capable of conducting the proposed operation in an acceptable manner.

In those cases where the application is successful, the Director General will issue an Air Operator Certificate in accordance with the example contained in figure 4.1 at the end of this chapter. Operations specifications and limitations which will be applicable to the certificate will also be issue to the operator as described in 4.4 below.

Should the applicant be considered not yet capable of conducting the proposed operation in the required manner, an AOC will not be issued and the applicant will be so advised by letter, indicating the reasons for the lack of approval.

ISSUANCE OF THE AIR OPERATOR CERTIFICATE

Provided that the Director General is satisfied with the reports of the Civil Aviation Authority of Nepal inspectors and has determined that there is no economic or legal bar to the proposed operation, it should proceed with the issuance of an AOC and the associated operations specifications.
In accordance with the example contained in Figure 4-1 at the end of this chapter, the AOC will contain or make reference to the following information:

- operator’s identification (name, location);
- date of issue and period of validity;
- description of the types of operations authorized;
- the type(s) of aircraft authorized for use; and
- authorized areas of operation and routes.

When the AOC is issued the operator should be provided at the same time with officially authenticated copies of the approved operations specifications. The operator should also be advised as to the procedure to prepare and process future requests for amendments of operations specifications.

Once the operator has received the AOC and the approved operations specifications, the operator may inaugurate the flight operations authorized. Thereafter, the operator is responsible for conducting all operations in full compliance with these authorizations and the applicable provisions of the applicable regulations. From that moment, the Director General will establish a continued audit on the operator to ensure that the required standards of operation are maintained.

**ISSUANCE OF OPERATIONS SPECIFICATIONS**

Operations specifications (or an equivalent document) and limitations applicable to an AOC will be issued in conjunction with the issue of the certificate. These operating specifications and limitations hereinafter referred to as operations specifications are utilized to supplement the general provisions of the basic certificate and to list authorizations and limitations not specifically covered by Civil Aviation Authority of Nepal regulations. The combined issuance of the AOC and the operations specifications constitute Civil Aviation Authority of Nepal approval of the operation.

For purposes of standardization and administrative convenience, operations specifications may be divided into separate parts as follows:

- Part A - General Provisions
- Part B - En-route authorizations and limitations
- Part C - Aerodrome authorizations and limitations
- Part D - Maintenance
- Part E - Mass and balance
- Part F - Interchange of equipment operations
- Part G - Aircraft leasing operations
Chapter 28

Procedure for Reporting Unapproved Parts to Type Certificate Holders and Regularity Authority

28.1 BACKGROUND

The use of unapproved parts in aircraft causes the aircraft unairworthy and leads to automatic suspension of Certificate of Airworthiness. It is the responsibility of air operator, aircraft maintenance technician that no unapproved parts are installed in aircraft. In addition, it is the responsibility of CAAN too that no unapproved parts are installed in any aircraft. The incident of installation of unapproved parts should be reported to aircraft type certificate holder and regulatory authority.

28.2 PROCEDURE

28.2.1 Verify the incident of installation of unapproved parts installed in aircraft by inspection.

28.2.2 Suspend the flight and take appropriate action against air operator, aircraft maintenance technician involved and other related personnel as per Enforcement Manual.

28.2.3 Seize the unapproved part.

28.2.4 Take photograph of unapproved part and relevant document.

28.2.5 Collect release note or any other documents if any.

28.2.6 Prepare a brief report relating all events of occurrence.

28.2.7 Report aircraft Type Certificate holder organization with report in 2.6, detailed data, picture, as email attachment.

28.2.8 Report the state of design in the same way as in 2.7 above.

28.2.9 Wait for the response from Type Certificate holder and state of design.

28.2.10 While reporting in progress the aircraft may be released after restoring it to airworthiness condition.

28.2.11 Take further steps, as deemed necessary, after getting reply from TC holders, state of design.

28.2.12 Complete enforcement action against the AOC holder and AMT concerned.
CHAPTER 29
Procedure for Approval of MEL

29.1 BACKGROUND

Normally modern aircraft are designed with duplicate systems with redundancy for higher degree of safety. Therefore failure of minor parts, components, equipments, system does not always render the aircraft unsafe for flight. With this concept in mind, the state of design approves the Master MEL so that flight can be continued with inoperative item under prescribed conditions. The operators are however required to customize their MEL on the basis of Master MEL and regulatory guidelines provided by CAA Nepal.

29.2 PROCEDURE

29.2.1 Check for the application made by authorized personnel, normally QA chief, Engineering Director or equivalent post holder.

29.2.2 Ensure that MEL is complete in all respects, i.e. bearing -
   (a) issue number
   (b) issue date
   (c) operator’s name
   (d) address

29.2.3 Check that all systems are included in MEL.

29.2.4 Make sure that MEL items are in ATA chapter format.

29.2.5 Check the availability of current version of Master MEL.

29.2.6 Read operators customized MEL carefully so that the repair intervals do not get deviated from Master MEL (MEL should not be less restrictive than Master MEL)

29.2.7 If MEL is less restrictive or not in format of Master MEL, return it and advise the applicant for necessary change.

29.2.8 After necessary correction from applicant re-evaluate each item of Master MEL.

29.2.9 If the evaluations of maintenance aspects of MEL are satisfactory forward it to Flight Operations Division for their comment.

29.2.10 Use the checklist for MEL approval and ask the operator to fill it completely.

29.2.11 Once satisfactory comment from Flight Operations Division forward to superior officer for approval from Director General.

29.2.12 After approval from Director General send one signed copy to the applicant and retain the other copy at library.
CHAPTER 30
Procedure for Noise Validation Certificate

30.1 BACKGROUND
NCAR chapter B.1 Para 9 requires the aircraft in international flight to obtain validation noise certificate from CAA Nepal.

30.2 PROCEDURE
30.2.1 Check that the application for noise certification validation is signed by authorized personnel from operator (QA Chief, Engineering Director or equivalent post holder).

30.2.2 Verify the application for approval of flight manual accompanied along with the application in 30.2.1?

30.2.3 Ensure sure that the aircraft is intended for international flights.

30.2.4 Ensure that the application is accompanied by the original noise certificate issued by contracting state of ICAO.

30.2.5 Is the noise certificate, issued in respect of an aircraft contained in the flight Manual?

30.2.6 If yes, initiate an office memo to superior officer.

30.2.7 Once approved by the Director General, issue Noise Certificate in a format prescribed in NCAR Chapter B.1 Form B.1.6 (Appendix-5) along with a letter stating that the noise certificate issued by the contracting state is validated.
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Chapter 31
Procedure for Special Flight Permit

31.1 BACKGROUND
The aircraft conducts flights with Certificate of Airworthiness under normal circumstances. However in special cases, like defects outside repair base, the aircraft may be flown back to the repair facility by special flight permit.

31.2 PROCEDURE
31.2.1 Check that the application is signed by authorized personnel (QA chief, Engineering Director or equivalent post holders).
31.2.2 Ensure that the details of defects are attached in form and manner acceptable to CAA Nepal.
31.2.3 Check Flight Manual/POH for provision of the special nature of flight as requested by operator.
31.2.4 If the flight is unsafe without further maintenance, make sure such maintenance is carried out.
31.2.5 After necessary on the maintenance site, if it is allowed in accordance with Flight Manual/POH and other relevant manuals and documents, the special flight permit may be issued.
31.2.6 Initiate an office memo to superior officer.
31.2.7 Once approved by the Director General, the special flight permit shall be issued as per format prescribed in a Form B.4.3 (NCAR Chapter B.4, Appendix III)
31.2.8 The validity of permit shall be for ferry mission only or as sector mentioned in the permit.
Chapter 32
Procedure for Transmission of Fault, Defect to State of Design

32.1 BACKGROUND

The mandatory defect reporting is one of the major components of continuing airworthiness. CAA Nepal has made all operators responsible to report such defects to the organization holding type certificate. However, it is the responsibility of CAA Nepal to transmit such defects to the state of design for enabling state of design to issue continuing airworthiness information.

32.2 PROCEDURE

32.2.1 Collect information from operators and maintenance organization from mandatory defect reporting system.

32.2.2 Prepare the list of defect

32.2.3 Segregate defects to be reported to each concern state of design.

32.2.4 Keep record of sent reports in hard as well as soft copy.

32.2.5 Take necessary action if any in the event that state of design so requires.

32.2.6 Transmit the information from state of design from 2.5 to all concerned.
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Chapter 33

Procedure for developing Mandatory Airworthiness Action on Foreign Product

33.1 BACKGROUND

In normal circumstances the state of design issues mandatory airworthiness action for product of its design. However CAA Nepal also, in the interest of safety, issues such directives, particularly following an accident or incident and repetitive failure of any component.

33.2 PROCEDURE

33.2.1 Collect the data relating to the component involved in accident or incident.

33.2.2 Analyze the data from frequent failure of components.

33.2.3 Check the periodic maintenance requirements of the components discussed in 2.1 and 2.2.

33.2.4 Hold discussion with operators and maintenance organizations for possibility of lowering the maintenance interval.

33.2.5 If agreed in 2.4 inform state of the design with a copy of local Airworthiness Directive (A.D.).

33.2.6 After positive response from state of design issue the A.D. and inform the concerned operators and maintenance organizations.

33.2.7 Put the A.D. in the net for public access.
Chapter 34
Policy/Procedure for Inspection of Operators, AMOs, Foreign Air Operators

34.1 BACKGROUND
In order to discharge its obligation towards safety oversight functions, CAA Nepal undertakes various measures including audit, inspection etc. of national and international air carriers as well as national and international AMOs.

34.2 POLICY/PROCEDURE
34.2.1 The national air operators shall be audited once in every year, followed by follow up audit in the same year. The standard checklist shall be used during audit.

34.2.2 The international air operators shall be audited once in every two years, with mutual agreement with air operators, causing least inconvenience to travelling public.

34.2.3 The national AMOs and supplier organizations shall be audited once in every year followed by follow up audit in the same year.

34.2.4 The checklist in Part-2 of handbook shall be used for the audit.

34.2.5 The foreign AMOs and supplier organizations shall be audited once in every two years.

34.2.6 The local authority whose approval is validated shall also be informed of the validation by CAA Nepal and request for the surveillance activities report shall be made.

34.2.7 The local authority shall also be requested for the intimation of the alteration of approval, suspension or cancellation of the approval.

34.2.8 The audit report of authority, whose certificate of approval has been validated, shall also be evaluated during such audit.

34.2.9 The serious findings, if any, shall be forwarded to the state issuing original approval.

34.2.10 The condition of validation shall contain all the conditions set forth for the validations.
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Chapter 35
Procedure for RVSM Authorization

1. BACKGROUND
For flights in defined portions of airspace where, based on Regional Air Navigation Agreement, a reduced vertical separation minimum (RVSM) of 300 m (1000 ft) is applied between FL 290 and FL 410 inclusive. Detailed procedures are in ICAO (Doc 9574).

2. PROCEDURE

2.1 Make sure that the application has been signed by an authorized personnel like QA Chief or Engineering Director or equivalent post holder.

2.2 Scrutinize that the installation of equipments that make the aircraft:
   a) Shall be provided with equipment which is capable of:
      1) indicating to the flight crew the flight level being flown;
      2) automatically maintaining a selected flight level;
      3) providing an alert to the flight crew when a deviation occurs from the selected flight level. The threshold for the alert shall not exceed ± 90 m (300 ft); and
      4) automatically reporting pressure-altitude; and
   b) shall be authorized by the State of the Operator for operation in the airspace concerned.

2.3 Prior to granting the RVSM approval make sure from all supporting documents and that:
   a) the vertical navigation performance capability of the aeroplane satisfies the requirements.
   b) the operator has instituted appropriate procedures in respect of continued airworthiness (maintenance and repair) practices and programmes; and
   c) the operator has instituted appropriate flight crew procedures for operations in RVSM airspace.

Note - An RVSM approval is valid globally on the understanding that any operating procedures specific to a given region will be stated in the operations manual or appropriate crew guidance.

Note- Guidance material relating to aircraft equipment necessary for flight in airspace where RVSM is applied is contained in the Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive (Doc 9574).

2.4 On flights in which it is intended to land in instrument meteorological conditions, an aeroplane shall be provided with radio equipment capable of receiving signals providing guidance to a point from which a visual landing can be effected. This equipment shall be capable of providing such guidance for each aerodrome at which it is intended to land in instrument meteorological conditions and for any
designated alternate aerodromes.

2.5 In order to ensure safe transition between regions, a global height-keeping performance specification was developed so that, if met, the required Pz (1 000) value of the global system performance specification would be met. The global height-keeping performance specification applies to the aggregate of height-keeping errors of individual aircraft and simultaneously satisfies the following four requirements:

a) the proportion of height-keeping errors beyond 90 m (300 ft) in magnitude is less than $2.0 \times 10^{-3}$;

b) the proportion of height-keeping errors beyond 150 m (500 ft) in magnitude is less than $3.5 \times 10^{-6}$;

c) the proportion of height-keeping errors beyond 200 m (650 ft) in magnitude is less than $1.6 \times 10^{-7}$; and

d) the proportion of height-keeping errors between 290 m and 320 m (950 ft and 1050 ft) in magnitude is less than $1.7 \times 10^{-8}$.

2.6 Take above matter into considerations while approving the RVSM authorization from the operator. The approval may be granted by the Director General unless delegated the authority down the line.
Chapter 36
Approval of Safety Management System

36.1 GENERAL

36.1.1 Safety is the term very frequently encountered in aviation community and is the concern of all.

36.1.2 Depending on the perspective, the concept of safety in aviation may have different connotations, such as:

a) Zero accidents or serious incidents, a view widely held by the travelling public;

b) Freedom from hazards, i.e. those factors which cause or are likely to cause harm;

c) Attitudes towards unsafe acts and conditions by employees of aviation organizations;

d) Error avoidance;

e) Regulatory compliance; etc.

36.1.3 Whatever the connotation one might choose, they have one underlying commonality: they all convey the possibility of absolute control. Zero accidents, freedom from hazards, and so forth, convey the idea that it would be possible –by design or by intervention –to bring under control in aviation operational contexts all variables that can precipitate bad or damaging outcomes.

However, while the elimination of accidents and/or serious incidents and the achievement of similar absolutes of control would certainly be desirable, such absolutes of control are unachievable goals in open and dynamic operational contexts. Hazards are integral components of aviation operational contexts. Failures and operational errors will occur in aviation, in spite of the best and most accomplished efforts to prevent them. No human activity or human-made system can be guaranteed to be absolutely free from hazards and operational errors.

36.1.4 Safety is therefore a concept that must encompass relatives rather than absolutes, whereby safety risks arising from the consequences of hazards in operational contexts must be acceptable in an inherently safe system. The key issue still resides in control, but in relative rather than absolute control. As long as safety risks and operational errors are kept under a reasonable degree of control, a system–open and dynamic, such as commercial civil aviation–is considered to be safe. In other words, safety risks and operational errors that are controlled to a reasonable degree are acceptable in an inherently safe system.

36.1.5 Safety is increasingly viewed as the outcome of the management of certain organizational processes, which have the objective of keeping the safety risks of the consequences of hazards in operational contexts under organizational control. Thus, for the purposes of this manual, safety is considered to have the following meaning:

Safety is the state in which the possibility of harm to persons or of property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and safety risk management.
36.1.6 Safety benefits of an SMS: The SMS is essentially a quality management approach to controlling risk. It also provides the organizational framework to support a sound safety culture. For general aviation operators, the SMS can form the core of the company’s safety efforts. For certificated operators such as airlines, air taxi operators, and aviation training organizations, the SMS can also serve as an efficient means of interfacing with CAA oversight office. The SMS provides the company’s management with a detailed roadmap for monitoring safety related processes.

36.1.7 Civil Aviation Authority of Nepal has made it mandatory to implement Safety Management System in aircraft maintenance from 1st January 2009.

36.1.8 It was agreed during the meeting with air operators that SMS would be implemented in a phased manner.

36.1.9 The implementation status would be verified during the regular audit of the air operator.

36.1.10 This Standard is in accordance with the following documents:

- Annex 6 to the Convention on International Civil Aviation, *Operation of Aircraft*
- ICAO Document 9734, *Safety Oversight Manual*

### 36.2 PROCEDURE

36.1 Make sure that the proposed SMS manual of operator (for maintenance of aircraft) has been application signed by the authorized personnel like QA Chief or Engineering Director.

36.2 Verify that the following elements are included in the proposed manual before approval else return the manual for necessary correction so that it includes all the elements specified in 36.2.3.

36.2.3 Structure of SMS manual

36.2.3.1 Scope and Applicability

36.2.3.2 References

36.2.3.3 Definitions

36.2.3.4 Policy

36.2.3.4.1 General Requirements

36.2.3.4.2 Safety Policy

36.2.3.4.3 Quality Policy

36.2.3.4.4 Safety Planning

36.2.3.4.5 Organizational Structure and Responsibilities

36.2.3.4.6 Compliance with Legal and Other Requirements
36.2.3.4.7 Procedures and Controls
36.2.3.4.8 Emergency Preparedness and Response
36.2.3.4.9 Documentation and Records Management
36.2.3.5 Safety Risk Management
36.2.3.5.1 System and Task Analysis
36.2.3.5.2 Analyze Safety Risk
36.2.3.5.3 Assess Safety Risk
36.2.3.5.4 Control Safety Risk
36.2.3.6 Safety Assurance and Internal Evaluation
36.2.3.6.1 General Requirements
36.2.3.6.2 System Description
36.2.3.6.3 Information Acquisition
36.2.3.6.4 Continuous Monitoring
36.2.3.6.5 Internal Audits by Operational Departments
36.2.3.6.6 Internal Evaluation
36.2.3.6.7 External Auditing of the SMS
36.2.3.6.8 Investigation
36.2.3.6.9 Employee Reporting and Feedback System.
36.2.3.6.10 Analysis of Data
36.2.3.6.11 System Assessment
36.2.3.6.12 Preventive/Corrective Action
36.2.3.6.13 Preventive/Corrective Action
36.2.3.6.14 Management Reviews
36.2.3.6.15 Continual Improvement
36.2.3.7.1 Safety Promotion
36.2.3.7.2 Safety Culture
36.2.3.7.3 Communication and Awareness
36.2.3.7.4 Personnel Requirements (Competence)
36.2.3.7.5 Training
36.2.3.7.6 Safety Lessons Learned
36.3 APPROVAL

36.3.1 After meeting all the requirements of 36.2.3, approve the SMS manual, return one copy stamping the approval stamp and keep one copy in the technical library.
Chapter 37
Amendment of Regulations & National Standards and Filing Differences to ICAO

1. GENERAL
CAA Nepal shall amend its national standards in line with the ICAO SARPs. The pertinent requirements will follow the applicable amendments in ICAO.

CAA, Nepal particularly Airworthiness Inspection Division is directly involved in issues related with ICAO Annexes 1, 6, 7, 8 and 16.

2. PROCEDURE FOR AMENDMENT
2.1 Keep checking ICAO site for latest status of Annexes 1, 6, 7, 8 and 16.
2.2 The other sources for amendment information may be the ICAO affairs Department, CAA Nepal head office which receives the notice of proposed amendment from ICAO.
2.3 The next source is the technical library.
2.4 Evaluate the amendment in detail, for applicability.
2.5 In cases of applicability of the amendments, initiate the office memo and amend NCAR to incorporate the amendment to higher officer.
2.6 Upon approval from the Director General embody the amendment in the pertinent Chapter of NCAR.
2.7 If no existing Chapter suits the amendment create a new Chapter.
2.8 Notify all concerned like operators, AMOs, other approval holders about the amendment.
2.9 Keep the amend portion of NCAR in the net for public access.
2.10 If the existing requirements are in contradiction with ICAO SARPs identify them.
2.11 Make the list of differences in categories more exacting, less protecting, not applicable.
2.12 Discuss these differences within the division.
2.13 If they can be implemented, amend the requirements with steps as discussed above.
2.14 If they cannot be implemented, initiate an office memo to be forwarded to the Director General for approval for filing differences.
2.15 Once approved notify ICAO about these differences.
2.16 Forward the differences to ATS Department CAAN Head Office to publish them in AIP.
2.17 Ensure that the filed differences are listed in ICAO Annex.
2.18 If not listed in Annex as forwarded to ICAO, correspond with ICAO till exact filed differences are listed.
Chapter 38

Procedure for Amendment of Adopted Airworthiness Regulations

1. GENERAL

CAA Nepal having limited aviation activities adopts the code of airworthiness regulations of reputed authorities like FAA (USA), EASA (EU) and other contracting states especially in cases of type acceptance, AMO, licensing, training organizations. While adopting these foreign regulations it is the responsibility of CAA Nepal Airworthiness Inspection Division that these regulations are updated with amendments in applicable ICAO SARPs.

2. PROCEDURE FOR AMENDMENT

2.1 Check the ICAO website every week for amendment in Annexes 1, 6, 7, 8 and 16.

2.2 Gather the revision status from technical library as alternate source of information.

2.3 Verify that the concerned state from which the regulations have been adopted has updated the regulation in accordance with the amended Annexes.

2.4 If yes, adopt the amended regulation accordingly for CAA Nepal use.

2.5 If not, correspond with the state for the information regarding the change in Annexes.

2.6 If CAA Nepal has not adopted the regulation ditto, amend our regulation to reflect the amendments of Annexes.

2.7 Notify the concerned for the amendment in Nepalese regulation.

2.8 After amendment keep the relevant regulation in net for public access.
1. **Background**

CAR 2002 Rule 49 and NCAR chapter D.1 Para 8 have got provisions to validate the AMO certificates issued by ICAO contracting states. CAA Nepal validates such foreign AMO on the basis of certificate for approval issued by contracting states.

2. **Procedure**

   Make sure that the application has been made by -
   
   a) CEO/Accountable Manager
   
   b) QA Manager or Personnel
   
   c) Local agent/representative
   
   d) Local operator
   
   e) Ensure that MOE/RSM or equivalent manual is attached in hard or soft copy.
      
      i. Preference should be given to the approval from authority where the maintenance organization is located.
      
      f) Has the maintenance organization got certificate of approval as described in 2.3?
      
      g) Ensure the certificate is valid and scope well specified.
      
      h) Make sure the applicable fee has been paid in accordance with CAR 2002.
      
      i) Have the facilities been audited?
      
      j) If yes, is the audit report satisfactory?
      
      k) Ensure the audit report from the local state is also satisfactory.
         
         i. If all the above conditions are met, initiate an office memo to superior officer for approval from the Director General.
         
         ii. Once approved, prepare a Certificate of Validation along with condition of validation and
         
         iii. send them to applicant.
         
         The condition of validation shall contain -
         
         a) The Nepalese validation shall remain valid till the date of original certificate validity.
         
         b) The Nepalese validation shall be revoked, suspended if the original authority does so in its certificate.
         
         c) The applicant shall be responsible to inform CAAN for any suspension, variation and cancellation of original certificate.
   
   2.13 The local state shall also be notified of the validation and request be made to provide annual audit report and actions taken if any against the AMO.
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Chapter 40
Export C of A Procedure

1. BACKGROUND
NCAR Chapter B.3 has got a provision to issue export C of A to Nepalese registered aircraft, which is intended to be exported. The following procedures are laid down for this purpose.

2. PROCEDURE
2.1.1 Make sure that authorized personnel have made the application. (QA Chief, Engineering Director or equivalent)
2.2 Ensure fee for export C of A has been paid as per CAR 2002 requirement.
2.3 Check all maintenance, inspection record for embodiment of AD/SB/SL etc.
2.4 Check document and aircraft as per C of A renewal checklist.
2.5 Perform test flight.
2.6 Analyze any additional specific requirement of importing state.
2.7 If all requirements are met initiate office memo for Export C of A.
2.8 Issue Exports C of A in format of NCAR Chap B-3 after approval from the Director General.
2.9 In case of any additional requirements that are not required by CAA Nepal keep them as remarks/ exceptions in Export C of A.
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Chapter 41
Procedure for granting NDT approvals

1. BACKGROUND

CAA Nepal normally approves the training courses of NDT of internal reputation. Following are the procedures to grant the approval for NDT.

2. PROCEDURE

2.1 Make sure that the application has been made by authorized personnel (QA Chief, Engineering Director or equivalent post holder).

2.2 Scrutinize all the relevant documents like training certificate, QA recommendations, experience sheet etc

2.3 Make sure that the training is from reputed standard like American ASNT or European PCN standards.

2.4 Has s/he passed the oral test on safety measures conducted by CAA Nepal?

2.5 Is the necessary fee as per CAR 2002 for the approval deposited?

2.6 Is the NDT procedure manual of the operator/AMO approved?

2.7 Is the proposed NDT shop of operator/AMO approved?

2.6 Is all the requirements are met, forward the memo to superior office for the approval of NDT from the Director General.

2.7 Once approved prepare the approval/authorization within the scope of original approval/certificate.
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42.1 BACKGROUND

This chapter prescribes the procedure for the civil aircraft registration in Nepal. The basic guidelines for this Chapter are NCAR chapter B-5, current version of Annex-7, Rule 10 of CAR 2002 (2058 BS), National Civil Aviation Policy 2006.

42.2 PROCEDURE FOR AIRCRAFT REGISTRATION

42.1 Check that the applicant has the type of aircraft endorsed in his/her air operator certificate. Attach a copy of AOC if required.

42.2 Check that the application is in prescribed format of NCAR Chapter B-5 Appendix-1.

42.3 Check that the application has been filled by an authorized person.

42.4 Verify that all the fields of the application form are properly filled up and no information is missing.

42.5 Verify the fee paid is in accordance with the CAR 2002.

42.6 Cross verify the requirements of National Civil Aviation Policy are met.

42.7 Attach the copies of previous operator, Certificate of Registration.

42.8 Attach the copies of component status, AD/SB compliance list, modification list.

42.9 Cross verify the category of operation requested against the manufacturer’s designation.

42.10 Ensure that the aircraft has a type acceptance certificate from CAA Nepal.

42.11 Make sure that the applicant is willing to train the CAAN inspector for the type course, if it is first of the type.

42.12 If any of the above requirements are not met, inform the applicant and fulfill all requirements.

42.13 If all requirements are fulfilled, initiate a memo and forward it to superior officer.

42.14 Upon approval from the Director General fill up the civil aircraft register with all the details. (This job may be assigned to the office assistant under supervision)

42.15 If the aircraft is first of its type in Nepal inform the state of design for the continuing airworthiness information.

42.16 Direct the operator to arrange for the continuing airworthiness information from the type certificate holder.
Chapter 43
EVALUATION OF RELIABILITY DATA

43.1 BACKGROUND

The reliability data obtained from the air operator will be evaluated for the significant degradation in safety keeping an eye in the aviation safety.

43.2 Sources of data

The sources of the data for the reliability data are as given below:

- Unscheduled removals
- Confirmed failures
- Pilot reports
- Sampling inspections
- Shop findings
- Functional checks
- Bench checks
- Service difficulty reports
- Mechanical Interruption Summaries
- Other sources the operator considers appropriate

43.3 Evaluation procedure

43.3.1 The data will be evaluated in all areas in ATA chapter wise. The significant failures, defects, snags in a particular chapter will be noted.

43.3.2 The degraded level in a particular area will be discussed with the operator concerned.

43.3.3 The operator of the same fleet will also be consulted and their opinion taken into consideration and compared with the system of particular fleet in purview.

43.3.4 The QA of the concerned operator will also be taken into the whole picture.

43.3.6 In the interest of flight safety the special conditions like lowering the inspection interval or making the inspection more frequent or replacement of the parts or the special flight procedure or the maintenance procedure will be imposed.

43.3.7 The investigation may be initiated from CAAN and or the operator depending on the situation. The outcome of the investigation will be implemented and the special condition imposed may be relaxed if the trend in the future is in the better side.
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Introduction

This Chapter defines the procedure adopted by CAA Nepal to issue, Validate Foreign AMT Licence issued by ICAO Contracting States as per requirements laid down in NCAR Chapter F.5.

Procedure

1. CAA Nepal should verify the authenticity, Scope, Validity of licence and Limitations with the foreign licence issuing competent authority of the contracting state by suitable means (Email, Fax) to ensure all the requirements are met as per ICAO Annex 1.

2. After conformation of the licence is received from the competent authority of contracting state, CAA Nepal shall verify if the foreign licence is in full compliance with ICAO Annex 1.

3. After verification of foreign licence, CAA Nepal shall verify if the requirements are met as per NCAR Chapter F.5 Para 2, Para 3 and Para 4.

4. After the verification of requirements CAA Nepal grants "Certificate of Validation" or "Certificate of Authority" as per NCAR Chapter F.5.

5. CAA Nepal will not issue "Certificate of Validation" or "Certificate of Authority" as per NCAR Chapter F.5 if the Para 1, 2, 3 of this chapter are not fulfilled.