Transport Canada Transports Canada

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(08/2005)

Transport Canada Civil Aviation Guidelines:

Maintenance Control Manuals

Canada

Please direct your comments, orders and inquiries to:

Transport Canada
Civil Aviation Communications Centre (AARC)
Place de Ville
Tower C, 5th Floor
330 Sparks Street
Ottawa ON K1A 0N8
Telephone: 1 800 305-2059
Fax: 613 957-4208
E-mail: services@tc.gc.ca

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i. Introduction: Maintenance Control Manual Guidelines Purpose

This document is intended to help Air operators write a Maintenance Control Manual by identifying which Regulations must be addressed, explaining the intent, and providing practical examples to further clarify the Regulation.

Each section of this document is formatted in the following manner:

The specific requirements of CAR 706.08 within a text box such as this.

An explanation of the CAR requirements and why they are necessary will follow in bold font.

Example - An example of what each section of a MCM might contain. **The "examples" should not be used in a real MCM, as they are hypothetical and may not apply to an organization's actual methods.**

This document has been designed to provide guidance in interpreting, not replacing the Canadian Aviation Regulations.

ii. Maintenance Control Manuals (MCM)

MCM Role

A Maintenance Control Manual (MCM) is developed by the Air operator to describe how they will comply with the Canadian Aviation Regulations (CARs). The MCM is a Transport Canada approved document and can be viewed as a contract between two parties: the commercial operator that will use the MCM and Transport Canada who will oversee compliance with the regulations.

MCM Purpose – 706.08

CAR 706.08 requires that an air operator establish, maintain and authorize the use of a maintenance control manual (MCM) that contains information to ensure the efficiency of the maintenance control system.

The intent of the MCM is to allow an operator the flexibility to be innovative in their approach to conducting business. The MCM describes how the operator is going to comply with the regulations, which for the most part are not prescriptive. The MCM is the means for setting company policy, and informing an operator's staff about company procedures.

The CARs require that there is a program to address each regulatory requirement. For example, Standard 726.08(1)(n) requires that the MCM contain "a description of the evaluation program required by Section 706.07 of the Canadian Aviation Regulations." Each operator must develop an evaluation program that is appropriate to the size and complexity of their organization. The evaluation program may differ greatly between large and small companies.

MCM Format

The format of each air operator's manual may be different. The format does not really matter; but it should be in a logical order with the user in mind. STD 726.08 specifies what minimum information must be contained in the manual.

When documents are incorporated by reference in the MCM, the Maintenance Manager must certify in writing that the incorporated documents and every amendment thereto meet the requirements of the control established in the MCM

1. Table of contents - 726.08(1)(a)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information:
>
> *(a)* a table of contents..."

A table of contents (TOC) is used in the Manual to enhance data access and information retrieval by allowing a quick scan of the entire Manual when looking for a key item. A good TOC will get the reader to the first page of the topic in question. The TOC should be created after the Manual has been completed. The TOC contains a list of the Manual topics identified by number and Manual page number.

The order of the topics in the manual shown in the example below is not consistent with the order of sections within the Standard, but may be more practical for some operators.

Example:

Sample Table of Contents

		Page
Cover Page		
Certification & Approval Page		1
List of Effective Pages		2
Amendment Record		3
Introduction		4
Table of Contents		5 & 6
Section 1	**Administration**	
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2. Legal name of air operator – 726.08(1)(b)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information:
>
> (b) the legal name of the air operator and, where that name is not the name under which the air operator does business, its trade name…"

An air operator's legal name is the title it is registered under so that it may do business in a province. It may be a number or the name of the owner, but is not necessarily the name that the organization uses daily. This information should include street address and/or mailing address, phone and fax numbers, and an email address.

Example:

146774 Inc.
Doing business as (d.b.a.):
Acme Aero Ltd.
8876 Any Street
Anytown, Ontario H0H 0H0
Phone: 343-456-7890
Fax: 343-456-7899
Email: acme@flyon.net

3. Description of air operator – 726.08(1)(c)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> (c) a brief description of the organization which includes the following information:
>
> (i) the approximate size of the organization;
>
> (ii) the geographic location of the office facilities and/or their operation's base when not co-located;
>
> (iii) the type and number of aircraft operated; and
>
> (iv) the nature of the operation…"

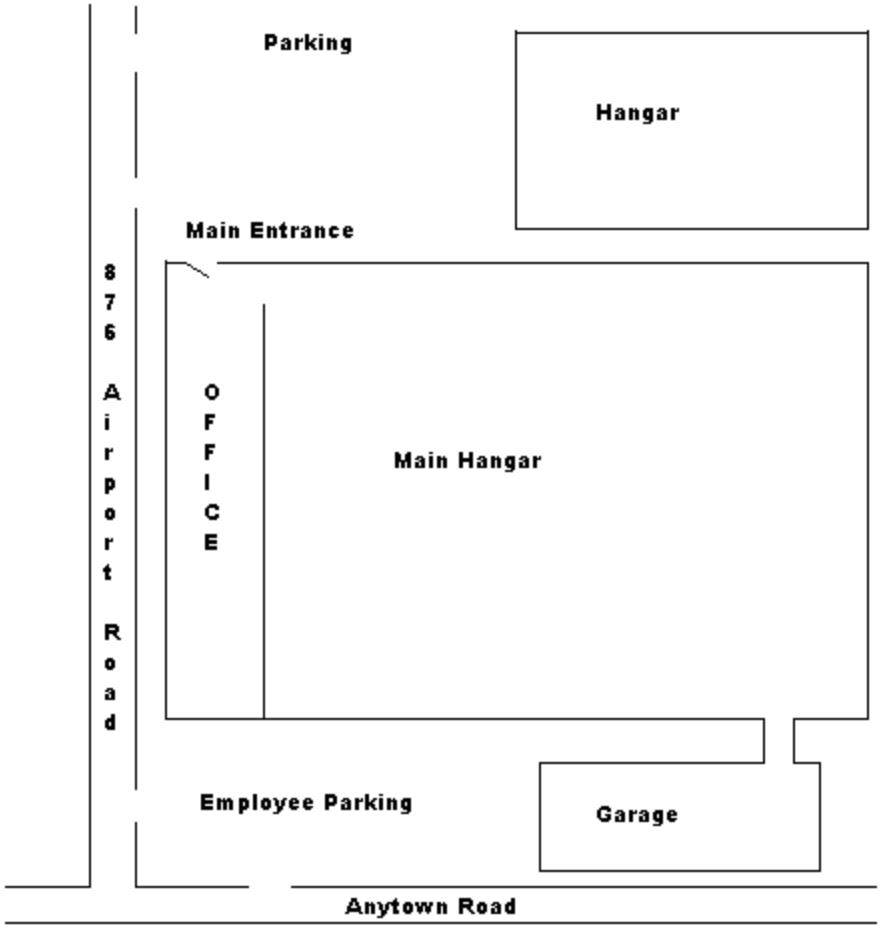
The description of the organization must include the size, location of facilities, aircraft operated and what type of service is offered to the public. This is helpful to determine if the policies contained in the manual are appropriate with the size and complexity of the operation.

Example:

Acme Aero Ltd. is a commercial air operator of 4 aircraft, employing approximately 15 people and provides Aerial and Air Taxi services to the public from a base at the Anytown airport.

The main base consists of offices with a customer reception/lounge area, two aircraft hangers, and a vehicle garage.

The offices are located on the street side of Hanger No. 1 which is a 26 x 300 foot facility located at 876 Airport Road, Anytown, Ontario. An additional 50 x 100 foot hanger is located to the north of the main hanger and the garage is connected to the main hanger by a covered walkway on the south side of the building.



The company operates the following aircraft:

Number	Type	Operations
3	Cessna C185	Aerial work and Air Taxi
1	DHC-2 Beaver	Aerial work and Air Taxi

.

4. Compliance statement 726.08(1)(d)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information…
>
> (d) a statement signed by the air operator confirming that the MCM and any incorporated documents identified therein reflect the air operator's means of compliance with the Regulations, as required by Section CAR 706.08…

CAR 706.08 requires that an air operator develop an MCM to ensure the efficiency of the maintenance control system. It also introduces the concept of having other documents or manuals that contain information required in the MCM separate from this manual but enabled and controlled through "incorporation by reference".

The MCM serves as a contract between the organization and Transport Canada. The certificate holder signs a statement, agreeing that the organization will use the manual to comply with regulations.

Example:

CERTIFICATION OF COMPLIANCE

This manual, and any incorporated documents, reflects this organization's means of compliance with the Regulations as required by CAR 706.08. In the event of a conflict between this manual and the CARs, the CARs will prevail. All personnel are required to understand their assigned duties as described in this manual. All incorporated documents identified herein, and every amendment thereto, shall meet the requirements established in this manual. The policies and procedures outlined in this manual, and all incorporated documents identified herein, will be strictly adhered to at all times.

Signed_____ Certificate Holder

Print _____Date_____

APPROVAL

This manual is approved as meeting the requirements of an Air operator Certificate pursuant to Canadian Aviation Regulation 706.08.

Signed_____ for the Minister of Transport

Print _____Date_____

5. Amendment control - 726.08(1)(e)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> (e) a description of the MCM amendment control procedure, to ensure compliance with the requirements of subsections 706.08(4) and 706.08(7)…".

CAR 706.08(4) requires that the MCM be submitted to Transport Canada for approval.

CAR 706.08(7) requires that any amendment be inserted in each copy of the manual within 30 days after receiving approval.

This section details the process that an organization uses to control revisions to its MCM. Transport Canada must approve the amendment prior to its distribution and use by the organization. After Transport Canada approval, the organization must update all MCM copies within 30 days and incorporate the amendment into their work routines.

Example:

The Maintenance Manager is responsible for amending and distributing the MCM.

All amendments will be shown by providing a vertical line in the right margin to indicate where changes in paragraphs or wording have been made. Each amended page will show the amendment number and date in the lower right hand corner. If an amendment requires additional pages, these pages will bear the page number of the preceding page and be suffixed alphabetically.

A completed amendment control page and a list of effective pages will accompany each amendment submitted to Transport Canada for approval.

When the amendment is approved by Transport Canada, the Maintenance Manager will distribute the amendments to the manual holders. The amendments will be inserted within 30 days of the amendment date. The control page will then be returned to the Maintenance Manager for filing and to confirm receipt.

SAMPLE AMENDMENT CONTROL PAGE

- Remove manual pages as indicated
- Insert new pages as indicated
- Sign and return this control page to Maintenance Manager

Amendment No. _____ Dated:_____

Remove Pages	Insert Pages

Prepared by:_____Date:_____
Maintenance Manager

Incorporated by:_____Date:_____

6. List of effective pages - 726.08(1)(f)

> "...the maintenance control manual (MCM) of a an air operator shall contain at least the following information...
>
> (f) a means of identifying each page of the MCM as required by subsection 706.08(4) of the *Canadian Aviation Regulations*. This shall be in the form of a List of Effective Pages, with each page numbered and either dated or marked with a revision number…"

CAR 706.08(4) requires that each page be submitted individually for approval or in accordance with an equivalent procedure.

A list of effective pages (LEP) is used to ensure that every manual contains current information. The LEP shows the revision status of each page.

Example:

EXAMPLE LIST OF EFFECTIVE PAGES

This manual includes the pages listed below at the revision status indicated.

Page	Revision	Date	Page	Revision	Date
1	0	1 May 2003	14	0	1 May 2003
2	0	1 May 2003	15	0	1 May 2003
3	0	1 May 2003	16	0	1 May 2003
4	0	1 May 2003	17	0	1 May 2003
5	0	1 May 2003	18	0	1 May 2003
6	0	1 May 2003	19	0	1 May 2003
7	0	1 May 2003	20	0	1 May 2003
8	0	1 May 2003	21	0	1 May 2003
9	0	1 May 2003			
10	0	1 May 2003			
11	0	1 May 2003			
12	0	1 May 2003			
13	0	1 May 2003			

Amendment #_____
Maintenance Manager _____ Date_____
Transport Canada _____ Date_____

7. Distribution control - 726.08(1)(g)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> (g) A description of the system used to distribute the manual, including the name or title of each person who holds a copy of the manual, to ensure compliance with the requirements of subsection 706.08(6)…"

CAR 706.08(7) requires that any amendment be inserted in each copy of the manual within 30 days after approval.

A copy of the MCM should be made available to each person who performs or certifies a function that is dealt with in the MCM or in any manual that is incorporated in the MCM. The Maintenance Manager and Transport Canada are the minimum number of MCM holders. Manuals can be serialized for identification.

Example:

MANUAL DISTRIBUTION

A copy of this manual will be available for each person who performs or manages maintenance activities.

The Maintenance Manager is responsible for distribution of this manual, and will insure that all holders have an updated copy. Copies are identified by serial number.

Manual Holder	Serial Number
President *(Certificate Holder)*	1
Maintenance Manager	2
Flight Dispatch	3
Contracted AMO	4
Transport Canada	5

8. Assignment of functions - STD 726.08(1)(h)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> *(h)* where functions have been assigned pursuant to subsection 706.03(3) of the *Canadian Aviation Regulations*:
>
> (i) the name and title of the person to whom the functions have been assigned;
> (ii) a description of the functions that have been assigned to each person; and
> (iii) where necessary to ensure comprehension, a chart depicting the distribution of the functions."

CAR 706.03(3) allows the Maintenance Manager to assign management functions to other qualified individuals as long as those functions are described in the MCM.

If an air operator is the holder of an approved maintenance organization (AMO) certificate the Maintenance Manager must be the same person for both the air operator and the AMO.

In a small organization, the Maintenance Manager may be the certificate holder and take overall responsibility for the entire operation. In larger companies, the air operator may appoint another individual to be responsible for the maintenance control system. The person appointed as Maintenance Manager may be called by any title. The Maintenance Manager retains responsibility when functions have been assigned.

There are three information requirements:

1. **The name and title of the employee assigned responsibility.**
2. **Details of the management functions assigned to that employee.**
3. **When applicable, a company organization chart showing to whom each employee reports.**

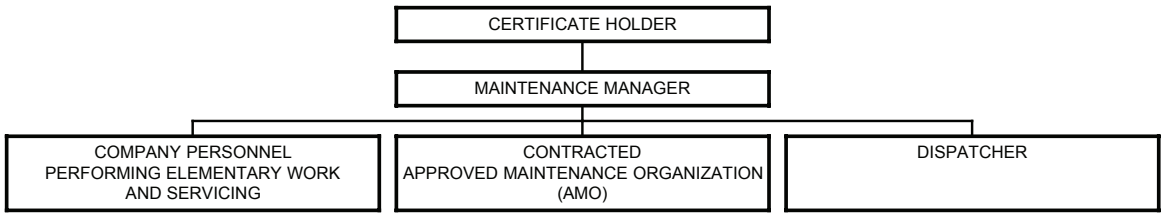
Example:

PERSONNEL

President *(Certificate Holder)*	*Name*
Maintenance Manager (or alternate title)	*Name*

Dispatcher *Name*

ORGANIZATION CHART



DUTIES AND RESPONSIBILITIES

The Maintenance Manager is responsible for the air operator maintenance control system. Management functions may be assigned to specified employees. Assigned duties are defined in the following sections. Organization personnel are required to be conversant with their assigned duties as described in this manual.

Maintenance Manager

The Maintenance Manager shall be responsible to the Certificate Holder for, but not limited to, the following:

a) The Planning and Control of all maintenance and maintenance records.

b) Liaison with Transport Canada.

c) Liaison with Approved Maintenance Organizations .

d) The maintenance of the company Evaluation Program.

e) Developing and maintaining this manual and aircraft maintenance schedules.

f) The review and safe keeping of all Technical Records.

g) The training and retention of records associated with Elementary Work and Servicing of company aircraft.

h) The Initial and Recurrent Training of all personnel and maintenance of the associated personnel records.

i) The maintenance process control including maintenance arrangements, maintenance records and retention of Weight and Balance reports for all company aircraft.

j) Airworthiness Directive compliance and Service Publication review.

k) Identifying items for service difficulty reports (SDR) and the submission of SDR reports.

Dispatcher

a) The Technical Dispatch of company aircraft, including the removal from service of any aircraft that is unsafe, or that does not comply with the requirements of the CARs or this document.

b) All applications made to Transport Canada for company aircraft Flight Authorities.

Temporary absence of Maintenance Manager

In case of temporary absence, the duties of the Maintenance Manager may be assigned, by the Certificate Holder, in writing, to another person within the company's senior management for periods of up to 30 days. Longer assignments will require a separate Transport Canada approval.

9. Performance standards - STD 726.08(1)(i)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> *(i)* where the organization uses, pursuant to subsection 571.02(1) of the *Canadian Aviation Regulations*, standards for the performance of elementary work or servicing that are other than those recommended by the manufacturer, the identification of those standards;

CAR 571.02(1) requires that the latest standards be used for maintenance or elementary work as recommended by the manufacturer but allows an operator to develop their own standards. The operator must be able to demonstrate that the standard is equivalent to those specified by the manufacturer.

If standards other than the manufacturers' recommendations are used they must be described in the MCM.

For instance, a manufacturer of a particular aircraft may describe a seat belt removal and replacement procedure in their manual that is complex and is time consuming. On the other hand, an organization may have had extensive experience with this aircraft type, and developed a procedure that uses less time and effort to arrive at the same result. The organization must demonstrate to TC that the procedure is equivalent to the manufacturers. This may be accomplished by means of a letter from the manufacturer or documented evaluation by an expert in the field. The new standard must be identified in the MCM.

Example:

> All work carried out by this organization will be performed in accordance with the manufacturer's recommendations, and standard industry practices with the exception of the following:
>
> > Removal and replacement of passenger seat belts and harnesses will be complied with using Acme Aero Seat Belt System (AASBS). AASBS has been evaluated by the aircraft manufacturer and found to be equivalent to their procedure. The Maintenance Manager will maintain a file containing applicable procedures, specifications and letters of acceptance from the aircraft manufacturer.

10. Regulatory and technical information - STD 726.08(1)(j)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> *(j)* procedures to ensure that regulatory information and technical data appropriate to the work performed are used in respect of elementary work and servicing, as required by Section 571.02 of the *Canadian Aviation Regulations*;

CAR 571.02 requires that technical data, such as the manufacturers maintenance manual, and regulatory information be used for elementary work as recommended by the manufacturer or as developed by an operator.

Explain the system that ensures any person who performs elementary work and/or servicing has the latest applicable technical manuals, airworthiness directives, regulatory requirements or other related information. This system should be easily auditable and should address how technical and regulatory information is controlled for any work that is performed away from base.

Example:

Regulatory and Technical Information:

The Maintenance Manager will insure that no work is initiated unless the latest regulatory and technical information is on hand and available to all persons performing work on behalf of the operator.

The following publications are held in the company library:

- Canadian Aviation Regulations (via internet)
- Airworthiness Notices
- Airworthiness Directives and type certificates (via internet)
- Advisory Circular AC43-13-1b/2a
- Cessna C185 Maintenance Manual
- Teledyne Continental IO-520 Service Manual
- McCauley Propeller Servicing Manual
- deHavilland DHC-2 Beaver Maintenance Manual
- Pratt & Whitney R985 Parts Manual
- Pratt & Whitney R985 Maintenance Manual
- Hamilton Standard Propeller Servicing Manual
- Service Letters and Bulletins for aircraft operated

11. Technical records - STD 726.08(1)(k)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> *(k)* details of the methods used to record the maintenance, elementary work or servicing performed, and ensure that any defects are recorded in the technical record established pursuant to Section 605.92 of the *Canadian Aviation Regulations…*"

CAR 605.92 describes the technical records requirements and includes the aircraft journey log; separate technical records for the airframe, engines, variable pitch propellers; and an empty weight and balance report.

CAR 605.93 describes the general requirements of technical record entries such as signing and dating entries, use of electronic records, safe record keeping practices, how to create an additional volume to a record and corrections and alterations.

This section describes the system that the organization is going to use to record the maintenance and elementary work that is performed. It could be as simple as having the person who performed the work write all of the details in the journey log or it may involve a complex system of organization forms and computer tracking accomplished by a dedicated technical records department.

Whatever system is chosen, the following key points should be considered:

- **Keep the system as simple and direct as possible**
- **Eliminate duplication of information on multiple forms**
- **The system should be easily auditable**

Example:

The following will be recorded in the aircraft journey log as soon as possible, but no later than before the next flight:

- Maintenance
- Defects
- Elementary work

Transcribe the details of maintenance, elementary work and defects from the journey log to the technical record within 30 days.

A work order package is used to record each maintenance function performed by the AMO. All documentation related to the maintenance performed will be attached to the work order and form part of the work order package. The work order package contains as appropriate, check sheets, additional work sheets, and other documents developed to control maintenance tasks. The work order forms part of the technical record.

The Maintenance Manager will verify the work order package for completeness, accuracy and that the work performed was certified by the appropriate individual.

Each entry is to be legible, permanent, dated and include the unique number and signature of the authorized person.

All technical records will be kept at the company main base or on board the company aircraft as applicable. A copy of all maintenance related records will be maintained in the company records office and filed in chronological order for each aircraft. All records will be kept at the company office for a period not less than three years.

A copy of each empty weight and balance report will be kept on file at the company main base.

12. Approved maintenance schedules - STD 726.08(1)(l)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> *(l)* the identification of any maintenance schedule approved in respect of any of the air operator's aircraft;

All aircraft operated by the air carrier must be maintained in accordance with maintenance schedules approved by Transport Canada in accordance with CAR 605 and STD 625.

All maintenance schedules developed by the air carrier must contain maintenance and inspection requirements for the air carrier's airframes, engines, propellers, appliances, survival equipment, emergency equipment and other equipment installed on the aircraft, including all applicable out of phase equipment requirements. The maintenance schedules must take into account the requirements of any modifications incorporated.

This section of the MCM must identify the maintenance schedules in use for each aircraft type operated by the air operator.

Aircraft maintenance schedules are stand alone documents not forming part of the MCM and are maintained separately with their own list of effective pages, however, they may be kept with the MCM for convenience. If desired, the schedules may be included as an appendix or incorporated by reference to this manual.

Example:

All aircraft operated by Acme Aero Ltd. will be maintained in accordance with maintenance schedules approved by Transport Canada.

Acme Aero Ltd has Transport Canada Approved Maintenance Schedules #O3467 for the Cessna 185 and #05647 for the Beaver aircraft.

The maintenance schedules are approved separately from this manual, by the Minister of Transport and are included as an attachment to this manual.

13. Maintenance planning and control - STD 726.08(1)(m)

> "726.08(1) …the maintenance control manual (MCM) of an air operator shall contain at least the following information…
>
> *(m)* a detailed description of the procedure used to ensure that any maintenance tasks required by the maintenance schedule, an airworthiness directive, or any task required for the rectification of a defect is completed within the time constraints specified in Subpart 605 of the *Canadian Aviation Regulations*;"

CAR 605 requires that maintenance tasks, Airworthiness Directives (ADs) and defects are addressed as necessary.

The complexity of the system depends on the size of the air operator, the aircraft types and the number of aircraft operated. The system is the process used by the Maintenance Manager to track the status of aircraft to forecast maintenance. From this information arrangements can be made for the required maintenance to be scheduled.

An effective Maintenance Planning system will reduce the necessity to use tolerances.

Example:

The Maintenance Manager will track and control maintenance requirements to ensure that required intervals are not exceeded. This is done using a spreadsheet that lists all maintenance requirements and includes the following information:

- Aircraft registration;
- Aircraft total airframe hours;
- Engine time since new;
- Item description;
- Item interval;
- Date/hours/cycles item last done;
- Date/hours/cycles next due;
- Hours remaining; and
- Deferred defects.

A maintenance reminder card in the Journey Log is used to notify the pilot of the next maintenance event. An example of this card is included in the appendices.
The Maintenance Manager will review the Journey Logs daily and update the spreadsheet.

When an aircraft has an item with 10 hours/20 cycles or less remaining to the next maintenance event the Maintenance Manager will make arrangements with the AMO.

Tolerances applicable to tasks are identified in the maintenance schedule. Prior to the commencement of any tolerance the Maintenance Manager will ensure the aircraft is inspected to the degree necessary to ensure that it is airworthy, and in a satisfactory condition to operate for the period of the tolerance. The use of the tolerance will be recorded in the Journey Log and the maintenance reminder card updated. Tolerances may not be applied to ADs or life-limited components.

14. Evaluation program - STD 726.08 (1)(n)

> "726.08(1) …the maintenance control manual (MCM) of an air operator shall contain at least the following information…".
>
> (n) a description of the evaluation program required by Section 706.07 of the Canadian Aviation Regulations;

CAR 706.07 requires an air operator to establish an evaluation program to ensure they are following the approved policies and procedures contained in their MCM and to ensure that their policies and procedures continue to comply with the regulatory requirements.

The evaluation system must include a review of all manufacturers publications and the Maintenance Schedules.

An evaluation program reviews the entire maintenance control system, including but not limited to a periodic, recurring internal audit. An internal audit is intended to identify and document areas that fail to be effective in meeting regulations, standards and company policies and procedures.

The program should determine the root cause of deficiencies, areas of noncompliance, areas that need improvement, corrective actions needed and follow-up to ensure that the changes were effective.

A root cause is the underlying fault in a system that allowed it to fail. If the root cause identifies inadequate policies or procedures then the policies or procedures must be amended.

An air operator must describe the evaluation process, including its frequency and the associated record keeping.

The size of an organization and its activities determines the complexity of the evaluation program. The program must cover all functions defined or required within the approved MCM.

Example:

The Evaluation Program is under the direct control of the Maintenance Manager. Corrective actions made in response to findings of the program are the responsibility of the Maintenance Manager.

The evaluation will be accomplished by a continuous review of organization activities in accordance with the following:

1. An initial audit to assess all company activities will be carried out within six months from the date the operating certificate is issued. This will be done using the Activity Area Checklists (see Appendix);
   a) Any findings will be recorded on the Audit Finding Form 4 (see appendix),
   b) The company auditor will forward the findings to the Maintenance Manager for assessment of the findings, determining the root cause, formulating a corrective action plan, including an implementation timetable,
   c) The Maintenance Manager will implement the corrective actions per the plan;
   d) The Maintenance Manager will schedule a follow-up audit of the areas that generated findings within three months of implementation of the corrective action.

2. Routine audits will be carried out annually. They will cover all company activities using the Annual Audit Report Form 5 and the Activity Area Checklists (see Appendix);
   a) Previous audit findings and amendments to company documentation and procedures incorporated during the previous 12 months will be evaluated during the annual audit for effectiveness,
   b) All findings will be recorded on the Audit Finding Form 4 (see Appendix),
   c) Upon completion of the annual audit, the Annual Audit Report and the Audit Findings will be forwarded to the Maintenance Manager for root cause analysis and corrective action plan development and implementation;
   d) The corrected findings will be forwarded to the annual audit file for review at the next annual audit for evaluation of effectiveness,
   e) A follow-up audit covering any non-conformance and the corrective actions will be carried out within 3 months of the annual audit, and
   f) Records of all audits, any non-conformance found, and any corrective actions required will be kept on file for 6 years.

3. The CARs will be reviewed at each amendment for any changes that affect the organization. A record of this review will be recorded on the CARs Review Form 7. Any pertinent changes will be incorporated and forwarded to the annual audit file for follow-up action.

4. All service bulletins and other manufacturer's recommendations will be reviewed upon receipt. The decision record or action taken will be attached and retained with the publication and kept on file for 6 years.

15. Defect control and rectification – STD 726.08(1)(o)

> "726.08(1) …the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> *(o)* a description of the defect rectification and control procedures required by Section 706.05 of the *Canadian Aviation Regulations*, including details of:
>
> (i) the methods used to detect and report recurring defects (see Section 726.05 and
>
> (ii) unless incorporated into the MEL preamble, the procedures for scheduling the rectification of defects whose repair has been deferred..."

CAR 706.05 and STD 726.05 requires an air operator to include in its maintenance control system procedures for recording and rectification of defects, including the identification of recurring defects.

CAR 605 requires that all installed equipment must be functioning correctly prior to flight.

CAR 605.09 and 605.10 allow for aircraft to be operated with equipment removed or inoperative under certain conditions and with certain restrictions. The MCM will include procedures to ensure that aircraft are not operated with unserviceable equipment unless the defect can be deferred.

The complexity of the system used to control defects, including rectification and deferral, as well as identifying and handling recurring defects will vary according to the type of aircraft operated and the size and nature of the operation. It may include policies and procedures for the use of an approved Minimum Equipment List (MEL).

The pilot in command must know the status of the aircraft in order to make an informed decision on its serviceability for the intended flight. Additional crew workload must be taken into consideration if defects are deferred.

The MCM must contain procedures to manage defects and to ensure that the Maintenance Manager knows the status of the aircraft so the necessary rectifications can be arranged within required time limits.

A recurring defect is one that is repeated 3 times on a particular aircraft within 15 flight segments. The purpose of specific procedures for identifying recurring defects is to avoid ineffective methods of repair and to ensure the defect will not reoccur.

Example:

Defect control and rectification

The company will not operate aircraft with defects or unserviceable equipment unless the defect has been recorded and deferred in accordance with the procedures contained in this manual. Any aircraft with defects that cannot be deferred will be immediately removed from service by the Maintenance Manager for rectification of the defect.

All defects will be entered in the aircraft Journey Log by the person who discovers the defect and will report the defect to the Maintenance Manager. This will be done as soon as possible but no later than before the next flight.

The Maintenance Manager will assess whether the defect can be deferred or if it must be rectified. If the Maintenance Manager is unable to make a determination, the contracted maintenance organization will be consulted.

The final authority to reject an unsafe aircraft rests with the pilot. The Maintenance Manager will train and authorize pilots to record the deferrals of defects that occur away from base.

For aircraft operated with an MEL the following procedures apply:

a) Any defect identified prior to departure will be recorded in the Journey Log immediately. The pilot will notify the Maintenance Manager. If the item can be deferred, as identified in the MEL, the pilot will ensure that the "O", "M" & "M#" procedures in the MEL are followed and ensure the appropriate entries are made in the Journey Log;
b) If the defect occurs in flight the defect will be recorded in the Journey Log as soon as practical but before the next flight. The pilot in command will consult the MEL and defer the item, if permitted, following the appropriate MEL procedures. The PIC will notify the Maintenance Manager as soon as possible;
c) The Maintenance Manager will enter the defect into Maintenance Planning and Control Program and include the date and time by which the MEL'd item must be rectified;
d) The Maintenance Manager will make the necessary arrangements to have all defects rectified;
e) Once the defect is rectified, any placards and/or circuit breaker collars will be removed and the item will be deleted from the Maintenance Planning and Control Program.
f) Once a defect is rectified, an appropriate logbook entry will be made.

For aircraft operated without a MEL, the following procedures apply:

a) Any defect identified will be recorded in the Journey Log by the person who discovered the defect and will notify the Maintenance Manager immediately;

b) Any defect that occurs during a flight will be recorded in the Journey log by the person who discovered the defect as soon as practical after the flight but no later than before the next flight and they will notify the Maintenance Manager as soon as possible upon the completion of that leg of the flight;
c) The Maintenance Manager will determine if a defect can be deferred or if it must be rectified prior to flight. If the Maintenance Manager is unable to make the determination he will consult with the Director of Maintenance of the AMO;
d) If the defect can be deferred the Maintenance Manager will arrange, as necessary, to have placards installed, unserviceable equipment removed the system or component isolated and have the action(s) entered in the Journey log as required. Depending on the action to be taken, an AMO may be required.
e) The Maintenance Manager will record the deferred defect on the Deferred Defect Sheet (see Appendix) which is attached to the front page of the Journey log. The sheet will include the date the defect must be rectified by. The Maintenance Manager will enter the defect into Maintenance Planning and Control Program and include the date and time by which the defect must be rectified;
f) For any defect that cannot be deferred the Maintenance Manager will make the arrangements to have an appropriately rated AMO rectify the defect.

Recurring Defects

A recurring defect is one that reoccurs 3 times in 15 flight segments. Once a defect has been identified as a recurring defect the Maintenance Manager will remove the aircraft from service in order to conduct an investigation into the root cause of the defect. The aircraft will remain off-line until the Maintenance Manager is satisfied that the source of the defect has been permanently fixed.

The Maintenance Manager will review the last 15 flight segments in the Journey Log for any signs of a recurring defect.

16. Service difficulty reporting - STD 726.08(1)(p)

> "726.08(1) …the maintenance control manual (MCM) of an air operator shall contain at least the following information…".
>
> *(p)* the procedures used to report service difficulties in accordance with Section 706.14 of the *Canadian Aviation Regulations*;

CAR 706.14 requires an air operator to report any service difficulties.

Service difficulty reports (SDR) are used to report problems with parts, operating procedures, maintenance procedures or manufacturing processes including suspected unapproved parts. An investigation into service difficulty could lead to an Airworthiness Directive or even a manufacturer's maintenance manual amendment. It is important that the system described in the MCM is clear and reflects that each reportable incident be submitted as a separate report.

The description of the system should include who submits the report, when and in what format.

Example:

The Maintenance Manager will submit Service Difficulty Reports (SDRs). This will be done within 3 working days from the day the item was first discovered using Transport Canada's web-based SDR program.

If all of the information is not available within three days the Maintenance Manager will submit an interim report and the report will be updated within 14 days.

Flight crew and dispatch personnel are to report any defect, malfunction or failure of an aeronautical product affecting, or that if not corrected is likely to affect, the safety of the aircraft, its occupants or any other person to the Maintenance Manager. The Maintenance Manager will review all service difficulties submitted by flight crew and dispatch personnel and all defects found during maintenance to determine if they are reportable. If there is any doubt if the item qualifies to be reported the Maintenance Manager will submit a report.

The Maintenance Manager will contact the Director of Maintenance of the AMO to determine if the AMO reported any service difficulties found during maintenance. If the AMO did not file

reportable service difficulties, the Maintenance Manager will obtain the data from the AMO and file the reports.

17. Technical dispatch - STD 726.08(1)(q)

> "726.08(1) …the maintenance control manual (MCM) of an air operator shall contain at least the following information…
>
> (q) a description of the technical dispatch procedures, including procedures for ferry-flight authorizations, extended range operations (EROPS), all weather operation, or any other special operation, as required by Section 706.06 of the *Canadian Aviation Regulations*..."

CAR 706.06 requires an air operator to include in its maintenance control manual, technical dispatch procedures to ensure that aircraft are not operated unless they are airworthy, appropriately equipped, configured and maintained for their intended use.

The purpose of the technical dispatch procedures is to ensure that only those aircraft that conform to applicable airworthiness and operational requirements are dispatched. This system also forms the basis upon which the pilot will determine aircraft serviceability in respect of airworthiness directives, maintenance, weight and balance control or operational requirements.

The system should be designed to prevent the dispatch of an aircraft unless all equipment necessary for the specific flight is serviceable, maintenance performed on the aircraft was complete and properly certified, and identifies any test flight requirements.

Example:

The Maintenance Manager will ensure that no aircraft are operated unless they are airworthy and appropriately equipped for their intended use.

Before accepting an aircraft, the pilot will review the aircraft Journey Log for the next maintenance event due, for the completion of any maintenance performed prior to flight including a maintenance release and review of the Deferred Defect Sheet for any outstanding defects.

There shall be sufficient hours/cycles/days remaining to the next maintenance event to complete the intended flight.

18. Parts and materials – STD 726.08(1)(r)

> "…the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> (r) procedures to ensure that only parts and materials that meet the requirements of Section 571 of the Canadian Aviation Regulations are used in the performance of elementary work or servicing, including any details respecting part pooling arrangements that have been entered into..."

CAR 571 requires that only the parts and materials equivalent to or specified by the manufacturer shall be used.

The MCM must describe the methods used to control parts and materials and must include traceability, storage, handling procedures and pooling arrangements.

Example:

Only parts and materials that are identified and recommended by the aircraft manufacturer will be purchased and used on company aircraft. Purchase records will be kept by the Maintenance Manager.

A locked storage shed for flammable materials is located to the south of the hanger and is clearly identified above the door with the sign "Aircraft Servicing Materials". All such materials shall be kept in closed containers that are clearly marked as to their contents. No fluids shall be dispensed from any unmarked container. If any unmarked containers are found, the container and its contents are to be disposed of in an environmentally safe manner and a report will be filed with the Maintenance Manager. Any non-flammable materials will be stored in the locked parts storage locker in the hanger. Keys for the Servicing shed and the parts locker are the responsibility of the flight dispatcher.

Parts and materials that are used on ground equipment and vehicles will be stored in the garage and returned to the storage area in the garage after use.

The Maintenance Manager will advise the Flight Dispatcher when special arrangements have been made for the use of other operator's fuel or other materials at locations away from main base. The Flight Dispatcher will advise the pilot of any such arrangements.

19. Elementary work and servicing –STD 726.08(1)(s)

> "… the maintenance control manual (MCM) of an air operator shall contain at least the following information...
>
> (s) a description of the methods used to ensure that the persons authorized to perform elementary work or servicing are trained as required by Section 706.12 of the Canadian Aviation Regulations and qualified in accordance with the requirements of Section 706.10 or 706.11 of the Canadian Aviation Regulations, as applicable..."

CAR 706.12 requires that an air operator implement a training program to ensure that persons who are authorized to perform a function are trained in respect of the regulations, standards and air operator procedures related to that function.

STD 726.12 describes the minimum requirements of the training program.

CAR 706.10 requires that no air operator shall authorize a person to perform a task that is elementary work unless that person has been trained and the task has been performed under the supervision of an AME.

CAR 706.11 requires an air operator to ensure that each person who performs or requests the performance of servicing has been satisfactorily trained.

Example:

The Maintenance Manager will ensure that all personnel receive training appropriate to their duties.

Personnel who request aircraft servicing or perform elementary maintenance or servicing will receive training in those areas for relevant aircraft types. The training for servicing will be provided by the Maintenance Manager and will be successfully completed prior to performing or requesting servicing. The training for elementary maintenance will be provided by an Approved Maintenance Organization. The training will consist of classroom instruction and practical demonstration of the task.

Personnel must perform each Elementary Work or Servicing task under the direct supervision of an AME prior to being authorized to perform the task unsupervised.

Each employee will receive a transcript of his or her training upon completion of the training. An authorization card listing the aircraft type and the Elementary Work tasks will be issued to the individual, signed by the Maintenance Manager. The Maintenance Manager will maintain records of all training and Elementary Work authorizations in accordance with the *Personnel Records* section of this manual.

Initial training, with the exception of the human factors module, will take place during the employee orientation session and will be completed prior to being released for company duties. This training shall include, but shall not be limited to, the Canadian Aviation Regulations, company policies and procedures and aircraft maintenance requirements. The content of the training will be documented and retained by the Maintenance Manager. Initial Human Factors training is provided by a training sub-contractor and will be completed with the first six (6) months of employment.

Update training will be carried out on a twelve (12) month cycle. The following table lists the minimum training that is to be completed within each twelve (12) month period by persons authorized to perform elementary work or servicing.

Type	Amount
Company procedures	0.5 day
CARs	0.5 day
Each aircraft type	2.0 hours
Human Factors	TBD by Evaluation Program
Other topics	TBD by Evaluation Program

Additional training will be identified through the Evaluation Program and will include regulatory changes, changes in the company policies and procedures, or new aircraft equipment.

20. Personnel records – STD 726.08(1)(t)

> "...the maintenance control manual (MCM) of an air operator shall contain at least the following information:…
>
> (t) a description of the kinds of personnel records to be retained as required pursuant to Section 706.13 of the Canadian Aviation Regulations;

CAR 706.13 requires that personnel records must be kept for at least two years after the date of the last entry. Personnel records include, training records, authorizations to perform elementary work, personal qualifications for anyone appointed to technical management positions or assigned technical management functions. Each person must be provided with a copy of their record.

For audit purposes, it is recommended that personnel records be kept beyond the two-year period.

Example:

Personnel records are kept in the Administration office and are the responsibility of the Maintenance Manager. All personnel records are kept in the office file for 5 years.

Personnel records will contain at least the following:

- Tombstone data applicable to each individual
- Résumés and experience
- Qualifications
- Authorizations to perform elementary work
- Training records

21. Weight and balance control – STD 726.08(1)(u)

> "... the maintenance control manual (MCM) of an air operator shall contain at least the following information…
>
> (u) a description of the procedure used to ensure that the empty weight and balance of an aircraft is recorded in accordance with the requirements of Section 571.03 or 605.92 of the Canadian Aviation Regulations…"

CAR 571.03 describes that entries are required in the technical record when an aircraft is weighed or when amendments are made to the empty weight and balance report.

CAR 605.92 requires that technical records be kept in the form of an empty weight and balance report or in a fleet empty weight and balance program.

The MCM must describe a procedure that identifies the aircraft empty weight and balance in the Journey Log. If alternate configurations are used, an entry in the journey log must indicate the current Weight and Balance Report, such as when changing from wheels to floats.

Example:

The Maintenance Manager will maintain and retain Empty Weight and Balance reports for all company aircraft.

Details of the Empty Weight and Empty Centre of Gravity will be entered in the journey log of each aircraft.

If the performance of elementary work, such as removing or installing seats, affects the weight and balance of the aircraft, an entry will be made in the journey log prior to flight to show the new empty weight and empty centre of gravity.

Copies of the Empty Weight and Balance Report will be carried on board the aircraft including the Equipment List in the aircraft Flight Manual.

If alternate configurations are used for the aircraft type, a copy of the Weight and Balance Report for each configuration will be carried on board. When switching between configurations, the entry in the journey log will indicate which Weight and Balance Report is applicable.

22. Maintenance arrangements – STD 726.08(1)(v)

> "... the maintenance control manual (MCM) of an air operator shall contain at least the following information:…
>
> (v) details of the procedures governing maintenance arrangements entered into pursuant to Section 706.09 of the Canadian Aviation Regulations, and a list of all such arrangements. This shall include the procedure used to communicate to an approved maintenance organization the maintenance requirements with regard to planned and unforeseen maintenance activities as well as those mandated by airworthiness directives;

CAR 706.09 describes what the air operator must detail in the MCM in regard to maintenance contracts. It is the air operator's responsibility to ensure that the Approved Maintenance Organization has adequate facilities, equipment, spare parts and personnel available at the site where the maintenance is to be performed. The AMO must be Transport Canada approved with the applicable aircraft or component ratings prior to making a maintenance arrangement. If a maintenance organization outside of Canada is to be used, additional requirements apply and are beyond the scope of this guidance material.

Example:

Maintenance of company aircraft will be contracted to an appropriately rated Approved Maintenance Organization. All maintenance arrangements will be authorized through a formal contract, purchase order or letter, copies of which will be kept by the Maintenance Manager.

A maintenance control sheet, Form AMO-01, will be completed by the Maintenance Manager, which will specify the work to be done and reference the applicable standard. The control sheet, the Approved Maintenance Schedule (if applicable) and any relevant check sheets will form the maintenance package delivered to the AMO. Following maintenance, the completed maintenance package will be kept on file by the Maintenance Manager. The Maintenance Manager will confirm that all required tasks have been completed and certified in the technical records prior to flight.

All maintenance will be coordinated by the Maintenance Manager. In the case of unscheduled maintenance arising away from main base, the Pilot shall contact the Maintenance Manager for direction. The Maintenance Manager will make arrangements with an appropriately rated AMO to carry out the work.

23. Flight authority applicant – STD 726.08(1)(w)

> "... the maintenance control manual (MCM) of an air operator shall contain at least the following information…
>
> .
>
> (w) the identification of any person eligible to apply for flight authorities in respect of the Air operator's aircraft..."

The MCM must identify those persons who may apply for flight authorizations on behalf of the company.

Example:

> The Maintenance Manager has delegated the flight dispatcher to be the person responsible for requesting flight authorizations in respect of the aircraft operated by this company.

APPENDIX A

Organization Forms & Documents Incorporated by Reference

If the MCM refers to appendices or specific company forms, create a section that lists them and attach examples, if applicable.

The MCM may incorporate detailed procedures manuals by reference in accordance with CAR 706.08(2). Lengthy and complicated procedures may be incorporated by reference provided the MCM contains a brief description of each Document Incorporated by Reference (DIR). The MCM should detail how the procedures are controlled. The MCM should describe how the DIRs are amended, distributed and certified. Amendments to DIRs are not required to be approved by Transport Canada but must continue to comply with the requirements of CAR 706.