GUIDE TO OUT OF PHASE TASKS AND MAINTENANCE

As the builder / owner of a Canadian registered amateur built aircraft, you are responsible to ensure that all required maintenance work on your aircraft is done and properly recorded in your aircraft record (usually the aircraft journey log). This is a statutory requirement found in the Canadian Aviation Regulations (CAR) and their matching Standards (Std).

What Are "Out of Phase" items?

These are inspections or certification requirements which do not fall on the same date as the annual inspection for the aircraft. Some examples are: ELT, ATC Transponder, propellor. REF: Std 625, App. C. –Following this page.

Why do items go "out of phase"

Because their inspection interval is not annual, or, because they were installed and first inspected on a date not coinciding with the aircraft annual inspection date.

When do I have to inspect these items?

On the due date for each item.

What do I have to inspect?

Inspect these items per your inspection check list and maintenance schedule, the only difference being the timing of the inspection.

What log entry do I make?

Enter the information in your log as you would if the component were inspected at the time of annual inspection. If the component requires certification documentation from another person (eg. an AME or a radio or avionics shop), these documents must be entered in your log.

What do I do about instruments or equipment requiring technical certification?

All operational and emergency equipment on board the aircraft must meet the applicable standards specified in the *Airworthiness Manual*; and be functional. REF: CAR Part VI subpart 2, Section 602.59 (a) and (b).

The person who performs the test must meet the requirements of CAR 571.02 (a) and (b).

When testing and/or calibration of equipment required for IFR flight is done, it must be performed by a person who is trained and qualified to perform the work, the applicable equipment manufacturer's maintenance instructions must be followed, and all test equipment used must have a valid calibration traceable to a national standard. REF Airworthiness Notice AN B032 rev. 2, 18 April 1996.

On the following pages you will find reprints of the applicable regulations and standards.

Disclaimer: This information is provided as an information service and is subject to change. MDRA INSPECTION SERVICE attempts to keep all information current, but you are reminded that at all times the information as published by Transport Canada is the correct version.

602.59 (1) Subject to subsection (2), no person shall operate an aircraft unless the operational and emergency equipment carried on board the aircraft

(a) meets the applicable standards specified in the *Airworthiness Manual*; and

(b) is functional.

571.02 (1) Subject to subsection (2), a person who performs maintenance or elementary work on an aeronautical product shall use the most recent methods, techniques, practices, parts, materials, tools, equipment and test apparatuses that are

(a) specified for the aeronautical product in the most recent maintenance manual or instructions for continued airworthiness developed by the manufacturer of that aeronautical product;

(b) equivalent to those specified by the manufacturer of that aeronautical product in the most recent maintenance manual or instructions for continued airworthiness;

Airworthiness Notice AN B032 Rev 2

Performance of Work

The existing regulation allows owners of amateur-built aircraft to perform and certify maintenance on their own aircraft. Nonetheless, when the test and/or calibration of equipment required for IFR flight, such as the altimeter, ATC transponder and altitude reporting equipment is performed, it must be demonstrated that:

a. The person who carried out the work is trained and qualified to perform the required test and calibration;
b. The applicable equipment manufacturer's maintenance instructions have been followed; and
c. All test equipment used in tests and/or calibration have a valid calibration traceable to a national standard.

Certification

When an entry is made in the aircraft log to the effect that the required test and calibration of IFR equipment has been performed, details of the work performed must be recorded in the aircraft technical record in accordance with Chapter 575 Para. 109(b) of the AWM, or CAR 605.92 and 605.93.

Part VI - General Operating and Flight Rules

Canadian Aviation Regulations 2009-2

Standard 625 APPENDIX C - Out of Phase Tasks and Equipment Maintenance Requirements

Content last revised: 2007/12/30

(1) This appendix lists the maintenance requirements for specific equipment. Unless otherwise specified, these intervals apply to all installed equipment of a type listed herein.

(2) In the case of operators having maintenance schedules approved in accordance with Appendix D, the intervals specified in this appendix are initial intervals that must be used by a new operator of the type. They may be amended once experience on that type has been gained, based on the results of the owner's maintenance monitoring program. These operators may also be authorized to deviate from the interval specified in this appendix, if they can demonstrate that the requirement as written does not apply, due to the design of the installed equipment.
(amended 2007/12/30; previous version)

(3) Nothing in these standards relieves the owner from the responsibility for determining the applicability of these requirements to his/her aircraft, or for identifying any other maintenance requirements relating to equipment not listed here.

Information Note:

Where doubt exists as to the compliance requirements in respect of a specific aircraft installation, the owner can contact the nearest Transport Canada district or regional office for assistance.

Operators with an approved maintenance schedule may obtain approval to deviate from the standard where acceptable documentation can be provided to Transport Canada.
(amended 1998/09/01; no previous version)

Canadian Aviation Regulations

Part I
Part II
Part III
Part IV
Part V
Part VI

Standards

Standard 621.19
Standard 622.11
Standard 622.131
Standard 623
Standard 624
Standard 625

Part VII
Part VIII
Part IX

Quick Links

TC AIM
CARs
CARAC
Cross Reference Between Old and New Regulations

Out of Phase Task Listings

Carry out the following tasks at the times indicated:

1. **All Aircraft**

Ensure that any applicable equipment maintenance task required by this appendix is performed at, or before, the next inspection interval listed therein.

2. **Aircraft Used in Dual Role Operations**

Upon conversion between roles, inspect to ensure that contamination, structural damage and other defects incurred during operation in the special purpose role, are rectified prior to operation in the normal role.

3. **Rotorcraft Dynamic Components**

At the intervals recommended by the aircraft manufacturer, inspect, overhaul or test:
(amended 1999/09/01; previous version)

(a) the drive shafts or similar systems;

(b) the main rotor transmission gearboxes;

(c) the main rotors and hubs; and
(amended 1999/09/01; previous version)

(d) the tail rotor.

4. **Propellers General**
(amended 2007/12/30; previous version)

For the purposes of this appendix, the following definitions apply:
(amended 2007/12/30; no previous version)

"double acting propeller" - A variable pitch propeller, the blade angles of which can be varied in either direction (increase or decrease) by direct control input from the pilot, or from an automatic mechanism, includes those propellers such as the "Hydromatic" models, in which governor oil pressure is opposed by engine oil pressure.
(amended 2007/12/30; no previous version)

"fixed pitch propeller" - A propeller, the blade angles of which cannot be altered in service.
(amended 2007/12/30; no previous version)

"ground adjustable propeller" - A propeller, the blade angles of which cannot be varied in flight, but are capable of being adjusted on the ground.
(amended 2007/12/30; no previous version)

"single acting propeller" - A variable pitch propeller, the blade angles of which can be varied by the application of control input in one direction only (either increase or decrease), the opposing force being provided by counterweights, springs, or air pressure.
(amended 2007/12/30; no previous version)

"variable pitch (VP) propeller" - A propeller, the blade angles of which can be varied in flight, either by direct selection, or by the action of an automatic mechanism.
(amended 2007/12/30; no previous version)

5. Variable Pitch Propellers
(amended 2007/12/30; previous version)

Except for aircraft that are operated under a special certificate of airworthiness in the owner-maintenance or amateur-built classification, all variable pitch propellers shall be overhauled at the following intervals:
(amended 2007/12/30; no previous version)

(a) Where the manufacturer has made recommendations regarding the air time between overhauls, overhaul at the interval recommended or every ten years, whichever comes first;
(amended 2000/12/01; previous version)

(b) Where the manufacturer has not made any recommendations regarding TBO, the propeller (s) shall be overhauled at the following intervals:
(amended 2000/12/01; previous version)

(i) in the case of propellers installed on turbine engines: 2,000 hours air time or ten years, whichever comes first;
(amended 2000/12/01; previous version)

(ii) in the case of double acting propellers installed on piston engines: 2,000 hours air time or ten years, whichever comes first, or;
(amended 2000/12/01; previous version)

(iii) in the case of single acting propellers installed on piston engines: 1,500 hours air time or ten years, whichever comes first.
(amended 2000/12/01; previous version)

Information Note:
The ten year overhaul intervals mentioned in (a) and (b), start either from its initial date of installation following manufacture, from its last five year corrosion inspection or its last overhaul, whichever occurred last.
(amended 2000/12/01; previous version)

6. **Fixed Pitch and Ground Adjustable Propellers**

(a) Fixed pitch wooden propellers shall be checked for tightness after the first 25 hours of air time following their installation and at each subsequent inspection.
(amended 2007/12/30; no previous version)

(b) At intervals of not more than 5 years, the propeller shall be removed from the aircraft and inspected for corrosion or other defects over its entire surface, including the hub faces and the mounting hole bores. While the propeller is removed, it shall also be checked for correct dimensions. However, if defects which require repairs beyond those recommended as field repairs by the propeller manufacturer are found, the propeller shall be repaired by an organization approved for the overhaul of propellers.
(amended 2007/12/30; previous version)

Information Note:
(amended 1998/09/01; no previous version)
The dimensional check requirement does not include a check on blade twist. The dimensional check refers to changes in blade dimension resulting from repairs, particularly cropping of the tips. It is intended to ensure that the blade diameter remains within service limits.

7. **Engines**

All piston and turbine engines installed in aeroplanes and helicopters operated pursuant to CAR 406, in large aircraft operated pursuant to CAR 604, and in aircraft operated pursuant to Part VII, shall be overhauled at the intervals recommended by the engine manufacturer, or in accordance with an alternative hard time interval or an engine on-condition maintenance program approved in accordance with Appendix D.

Information Note:

No hard time, including calendar time, between overhauls need be observed in the case of small aircraft reciprocating engines in non-commercial private operation.

8. Tachometers

The accuracy of mechanical drag cup type tachometers, for fixed wing propeller driven aircraft, shall be checked on site annually, and be accurate to within the tolerances established by the aircraft manufacturer or, where no tolerance has been specified by the aircraft manufacturer, to within +\- 4% of engine RPM at mid-point of the cruise range.
(amended 2000/12/01; previous version)

9. **Weight and Balance**

Except as provided for in an approved fleet empty weight and balance control program, all large aircraft shall be reweighed and an updated report prepared every five years.

10. **Non-stabilized Magnetic Direction Indicators (MDIs)**

(a) Except as provided in (b) and (c), non-stabilized magnetic direction indicators shall be calibrated, and a dated correction card installed for each indicator, at at intervals not exceeding 12 months;

(b) The annual calibration requirement of (a) does not apply to an aircraft operating under an air operator certificate, or to any large or turbine-powered pressurized aircraft, where:

(i) the aircraft is equipped with two independent stabilized magnetic direction indicators in addition to the non-stabilized direct reading magnetic direction indicator; and

(ii) a procedure for monitoring and recording the performance of the magnetic direction-indicators is detailed in the flight training unit's, or in the air operator's approved maintenance control manual approved pursuant to CAR 406 and CAR 706 respectively.

(c) The calibration requirement of (a)(i) can be postponed, for the purpose of flights commencing or terminating within the area of compass unreliability, as defined in the *Designated Airspace Handbook* (TP 1820), or any of a series of flights conducted within a period of seven consecutive days, where the series commences within the area of compass unreliability.

11. **Survival and Emergency Equipment**

Survival and emergency equipment shall be overhauled at the intervals recommended by the manufacturer.

12. **Emergency Locator Transmitters (ELTs)**

(a) Except where powered by water activated batteries, the ELT shall be inspected at intervals not exceeding 12 months, in accordance with Standard 571 of the CARs.
(amended 2007/12/30; previous version)

(b) In the case of ELTs powered by water activated batteries, the performance testing required by Appendix G of Standard 571 of the CARs shall be carried out at intervals not exceeding 5 years.
(amended 2007/12/30; previous version)

(c) ELT batteries shall be replaced at the interval recommended by the ELT manufacturer.

13. **Altimetry Devices**
(amended 2007/12/30; previous version)

(a) Altimeters and other Altimetry devices installed in aircraft operating under Instrument Flight Rules, or under visual flight rules in Class B and C Airspace or Class C and D Airspace that is designated as "Transponder Airspace" shall be calibrated at intervals not exceeding 24 months, to the parameters and tolerances outlined in Appendix B of Standard 571, or to equivalent standards acceptable to the Minister.
(amended 2007/12/30; previous version)

(b) For the purpose of this section, the term "altimetry devices" includes any air data computer, or other barometric device, providing a flight crew station, or an auto pilot, or automatic pressure altitude reporting system, or altitude alerting system with altitude data derived from static pressure.

(amended 2007/12/30; previous version)

14. **Air Traffic Control (ATC) Transponders**

ATC Transponders, including any associated altitude sensing reporting mechanisms, where installed, shall be tested every 24 months, in accordance with Appendix F of Chapter 571 of the *Airworthiness Manual*.
(amended 2000/12/01; previous version)

15. **Cockpit Voice Recorders (CVRs)**

(a) Cockpit Voice Recorders (CVR), where installed for compliance with the basis of certification listed on the type certificate, or where required by operating rule, shall be subject to the following maintenance, in accordance with a maintenance schedule meeting the following requirements:

(i) an operational check;

(ii) a functional check;

(iii) an intelligibility check; and

(iv) unit overhaul, at the interval recommended by the CVR manufacturer.

(b) An operational check shall be performed, in accordance with the manufacturers instructions, as follows:

(i) by maintenance personnel during each line check and following any system maintenance;

(ii) by each new, or partial change of, flight crew; and

(iii) upon installation in the aircraft.

(c) A functional check shall be completed in accordance with manufacturers maintenance instructions at 3,000 hours, or 12 months, whichever comes first.

(d) An intelligibility check shall be performed by means of a test procedure which, when completed under operational conditions, shall enable verification of intelligible recorded audio information from all the various input sources required by the regulations:

(i) upon initial installation;

(ii) at every 3,000 hours, or 12 months, whichever comes first.
(amended 2007/12/30; previous version)

(e) CVR maintenance and overhaul shall be performed in accordance with manufacturer's recommendations.
(amended 1998/09/01; previous version)

Information Note:
(amended 2007/12/30; previous version)

EUROCAE ED-56 (refer to its latest revision) document provides guidelines for CVR maintenance in general; it also provides information relative to equipment required to adequately evaluate the quality of voice recording.
(amended 2007/12/30; previous version)

Copies of ED56 may be obtained from:
(amended 2007/12/30; previous version)

EUROCAE, 11 rue Hamelin 75783 Paris CEDEX 16, France
(amended 2000/12/01)

16. **Underwater Locating Devices (ULDs)**

(a) The beacon case and water switch shall be cleaned at the interval, specified by the ULD manufacturers' recommendations.
(amended 1998/09/01; previous version)

(b) Operational checks shall be conducted on ULDs upon installation, and once a year thereafter. The ULD battery shall be replaced on or before the expiry date stamped on the battery, and a label affixed to the ULD case indicating the next replacement date.

(c) The ULD shall be inspected and tested at the intervals specified below:
(amended 1998/09/01; previous version)

(i) cleaning of the water switch at interval as recommended by the ULD manufacturer;

(ii) recertification of the ULD at 12 month intervals; and

(iii) replacement of the ULD battery at the interval as recommended by the battery manufacturer.

17. **Flight Data Recorders (FDRs)**
(amended 2007/12/30; previous version)

Information Note:

(i) Operators with an approved maintenance schedule may obtain approval to deviate from the standard where acceptable documentation can be provided to Transport Canada.
(amended 1998/09/01)

(ii) EUROCAE ED-55 (refer to its latest revision) document provides guidelines for FDR maintenance.
(amended 2007/12/30; no previous version)

Copies of ED-55 may be obtained from:
(amended 2007/12/30; no previous version)

EUROCAE, 11 rue Hamelin 75783 Paris CEDEX 16, France
(amended 2007/12/30; no previous version)

FDR Maintenance Schedule

18. **Fuel Tank System Safety**
(amended 2007/12/30; no previous version)

The maintenance schedule of turbine-powered transport category aeroplanes shall include provisions for the inspection of aeroplane fuel tanks and related systems, necessary to maintain the design features required to preclude the existence or development of an ignition source within the fuel tank system.
(amended 2007/12/30; no previous version)

Information Note:
(amended 2007/12/30; no previous version)

(i) The fuel tank system safety inspection instructions could consist of Instructions for Continued Airworthiness (ICA) recommendations developed by the holders of design approvals, mandated by the basis for certification of the design and any other requirement such as FAA SFAR 88.
(amended 2007/12/30; no previous version)

(ii) Maintenance schedules should be tailored to include inspection and maintenance criteria for each specific aeroplane configuration, addressing modifications or repairs that may affect

fuel tank system safety.
(amended 2007/12/30; no previous version)

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