

## Ground Lesson: Certificates, Documents, and Maintenance

### Objectives:

1. To understand elements relating to medical certificates, student and private pilot certificates, and logbook requirements
2. To understand elements relating to required aircraft documents and maintenance

### Justification:

1. It is necessary to understand when a pilot and aircraft are legally allowed to fly
2. Information will be asked during the Private Pilot oral exam

### Schedule:

Activity	Est. Time
Ground	1.5
<b>Total</b>	1.5

### Elements Ground:

- Certificates
  - Medical
  - Pilot
- Documents
  - Logbook
  - Aircraft
- Maintenance
  - Annual
  - 100 Hour
  - AD's
  - ELT
  - Pitot-Static
  - Transponder

### Completion Standards:

1. When the student exhibits knowledge relating to the requirements of certificates, documents, and maintenance of oneself and aircraft.

## Presentation Ground:

### Certificates

1. To pilot an aircraft one must have a valid pilot certificate and a valid medical certificate\*
  - (1) \*There is a new class of pilot certificate that does not necessarily require medical - LSA
2. medical certificate (14 CFR 61.23)
  - (1) *certificate issued by an FAA designated medical examiner that shows the holder is in proper health to fly operations allowed by that class of certificate.*
    - i. to find a designated FAA medical examiner look online, or go to local FSDO.
  - (2) 3 classes of medical certificate
    - i. first class - most stringent, and must be renewed every 6 months. required to be an Airline Transportation Pilot
    - ii. second class - must be renewed every 12 months. required for commercial operations
    - iii. third class - must be renewed every 24 or 36 months depending on age. required by private pilots
      - (i) 24 months if holder was younger than 40 years old at time of examination
      - (ii) 36 months otherwise
  - (3) expiration of medical certificates are on the last day of the month of which the certificate would expire.
    - i. "A third class certificate would received on January 5th 2007 would expire January 31, 2009"
    - ii. This is a basic aviation calendar convention
      - (i) "A \_\_\_\_ certificate expires on the end of the last day of the \_\_\_\_\_ month after the month of the date it was issued.
      - (ii) Applies to medical certificates, student pilot certificates, flight reviews, IFR currency, aircraft inspections, flight instructor certificates
  - (4) when a first or second class certificate expires, it can still be used for the operations that only require the class of certificate below it, for as long as *that* certificate would be valid
    - i. "A first class certificate is good for six months. at the end of the the 6th month, it can still be used for operations requiring only a second class certificate. at the end of the 12th month, it can be used for operations requiring only a third class certificate. at the end of the 24th month, the certificate must be renewed.
3. Pilot Certificates
  - (1) Student Pilot - 14 CFR 61 Subpart C (61.81 - 61.95)
    - i. *pilot certified to operate an aircraft for the purposes of practicing solo flight, subject to the limitations noted and endorsed in the student s logbook and pilot certificate.*
    - ii. student certificate *:a document that bears the student pilot certificate on one side, and a current, properly endorsed medical certificate on the other side*
    - iii. to be eligible at least 16 years old, able to read, speak, write, and understand English (14 CFR 61.83)
    - iv. certificate expires 24 calendar months from the month in which it is issued (14 CFR 61.19)
    - v. Privileges and Limitations (14 CFR 61.87 n-p)
      - (i) student may not take up any passengers
      - (ii) may not fly for compensation or hire

- (iii) may not fly with a visibility of less than 3 statute miles during daylight hours, and 5 statute miles at night.
  - (iv) may not fly to other airports (including cross country flights) without the proper endorsement by flight instructor
  - (v) may not fly at night without proper endorsement
- (2) Private Pilot - 14 CFR 61 Subpart E (61.102 - 61.120)
- i. *certificate issued by the FAA to operate an aircraft in the national airspace system for private pilot purposes (not for compensation or hire)*
  - ii. to be eligible the applicant must be
    - (i) at least 17 years old
    - (ii) able to read, write, and speak English
    - (iii) have a current medical certificate
    - (iv) receive proper CFI endorsements
    - (v) have the proper aeronautical experience (14 CFR 61.109)
      - a. at *least* 40 hours flight (at least 20 hours training, 10 hours solo)
      - b. training time to include:
        - (a) 3 hours cross country training
        - (b) 3 hours of night flight with at least one cross-country over 100 NM, and 10 takes and landings to a full stop.
        - (c) 3 hours of hood time
        - (d) 3 hours within 60-days of exam, in preparation for exam
      - c. solo time to include:
        - (a) 5 hours cross country
        - (b) one solo cross country of at least 150 NM round trip with at least 3 full stop landings at different airports, with one leg being at least 50 NM straight line.
        - (c) 3 takeoffs and landings to a full stop at an airport with a control tower.
    - (vi) pass knowledge test
    - (vii) pass a practical exam including oral and flight examinations
    - (viii)
  - iii. there is no expiration date on a private pilot certificate
  - iv. Privileges and Limitations (14 CFR 61.113)
    - (i) may not carry passengers or property for hire except in certain situations (61.113b)
    - (ii) must pay fair share of expenses (61.113c)
- (3) Commercial Pilot
- i. *a pilot certified to fly for compensation or hire*
  - ii. there are certain restrictions that are beyond the scope of this lesson which you may learn about in on going training.
- (4) ATP
- i. *Airline Transportation Pilot certificate*
  - ii. also beyond the scope of this lesson

## Documents

### 1. Logbook

- (1) A pilot need only log the aeronautical training and experience used to meet the requirements for a certificate or rating, or the recent flight experience requirements of the part.
- (2) unless you are a student pilot, the logbook does not need to be with you at all times that you fly.
- (3) other flight time need not be logged

## 2. Aircraft Documents

(1) Remember the acronym **AROW**

(2) **A**irworthiness Certificate (14 CFR 91.203(a)(1))

i. *certificate showing that a specific aircraft was in airworthiness condition at the time of issue. an FAA designated aircraft inspector issues it.*

ii. each aircraft is required to have an airworthiness certificate in the aircraft whenever flown, and it must be displayed on top of all other documents.

iii. airworthiness certificates do not have expiration dates, and stay valid as long as:

(i) airworthiness directives (ADs) are complied with

(ii) required maintenance is completed as necessary

(iii) required inspections are completed as necessary

(iv) aircraft contains the instruments and equipment necessary for the operations being practiced

a. equipment necessary for operations can be remembered with two acronyms

b. *day VFR* - TOMATO FLAAMES:

(a) **T**achometer

(b) **O**il pressure

(c) **M**agnetic compass

(d) **A**irspeed indicator

(e) **T**emperature sensor (if liquid cooled)

(f) **O**il temperature gauge (if air cooled)

(g) **F**uel gauges

(h) **L**anding gear position indicator lights

(i) **A**ltimeter

(j) **A**nti-Collision lights (if manufactured after 3/11/1996)

(k) **M**anifold pressure gauge

(l) **E**LT

(m) **S**eat belts

c. *Night VFR* - FLAPS:

(a) **F**uses (spares) or circuit breakers

(b) **L**anding lights (if for hire)

(c) **A**nti-collision lights

(d) **P**osition Lights

(e) **S**ource of energy (adequate to power all electrical and radio equipment)

(v) it is the owner or operators responsibility to ensure that the airworthiness certificate is valid.

(3) **R**egistration Document (91.203(a)(2))

- i. : document showing that the specific aircraft is registered to the United States
  - ii. each aircraft is required to have a registration document in the aircraft whenever flown
  - iii. Registrations are not transferable. A new registration must be issued whenever the plane is sold.
  - iv. Registrations are valid indefinitely until a new registration is issued.
- (4) **Operating Handbook (91.9(b)(1-2))**
- i. each aircraft must have a manufacturer approved flight manual for that specific aircraft.
  - ii. it is issued by the manufacturer
- (5) **Weight and Balance (91.103(b)(2))**
- i. each aircraft must have a weight and balance specification sheet specific to that aircraft.
  - ii. if equipment is added or removed, the weight and balance sheets must be updated.

## **Maintenance**

### 1. **Required Maintenance** - Remember **AVIATE**

- (1) **Annual (91.409(a))**
- i. :a thorough inspection of an airplane s airframe and engine(s).
  - ii. an annual must be done every 12 calendar months, and expires at the end of the month, one year after the inspection was done.
- (2) **VOR check (14 CFR 91.171)**
- i. must be done every 30 days. Maybe be done by any qualified pilot.
- (3) **100-hour (91.09(b))**
- i. aircraft operated for hire or used for flight instruction must have either an annual inspection or a 100-hour inspection every 100 hours of operation.
  - ii. the 100-hour limi may be exceeded by no more that 10 hours for the sole purpose of going to a location where the inspection can be completed.
    - (i) any excess time over the 100-hour due time will be subtracted from the *next* 100 hour inspection.
- (4) **Altimeter (91.411)**
- i. pitot static system must be checked every 24 calendar months for IFR operations
- (5) **Transponder (91.413)**
- i. Must be tested and inspected every 24 calendar months.
  - ii. must be tested by either the manufacturer or a certified repair station.
- (6) **ELT (91.207)**
- i. must be tested and inspected every 12 calendar months.
  - ii. must be replaced or recharged if the transmitter has been used for more than one hour of cumulative use.
  - iii. must be replaced or recharged if 50% of its useful life has expired.

### 2. **Additional Maintenance information**

- (1) **Airworthiness Directives (ADs) (91.403©)**
- i. :aircraft specific directives issued by the FAA whose compliance is required in order for the airworthiness certificate to be valid
  - ii. three types of ADs
    - (i) one time AD - requires a one-time modification

(ii) recurring AD - requires a check or service to be performed on an ongoing basis at specific intervals of time.

(iii) N/A AD - a "not applicable" AD but is still noted to show awareness of its existence

(2) Pitot - Static System (91.411)

i. must be tested and inspected every 24 calendar months.

ii. required for IFR only

iii. test must be conducted by the manufacturer, a certified repair station, or a certified mechanic with an airframe rating authorized to perform the tests

3. General FAR's

(1) See FAR 91.403-417 to see certain expectations and requirements of maintenance upkeep.