Task V.A: Preflight Inspection

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Lesson Overview

Objective

The student should develop knowledge of the elements related to a comprehensive preflight inspection. The student should know what to look for during each part of the inspection and be able to perform the preflight inspection as required in the necessary ACS.

Reference

- FAA-H-8083-3B, Airplane Flying Handbook (Chapter 2)
- POH/AFM

Key Elements

- P28A specific checklist
- Airworthiness
- Fuel grade and contamination
- Oil level

Elements

- Checklist
- Preflight overview
- What to inspect
- Detecting problems
- Ice and frost
- Loading and securing
- Determining the airplane is safe

Equipment

- White board
- Markers
- References

Schedule

1. Discuss objectives
2. Review material
3. Development
4. Conclusion

Instructor Actions

1. Discuss lesson objectives
2. Present lecture
3. Questions
4. Homework

Student Actions

Participate in discussion Take notes

Completion Standards

The student can perform a comprehensive preflight inspection, knowing what to look for at each part of the inspection, and can determine whether or not the airplane is airworthy and in a condition for safe flight.

Instructor Notes

Attention

Understanding what is required with each certificate and document that a pilot may obtain is essential to obtaining that certificate.

Overview

Review Objectives and Elements/Key ideas

What

Certificates and Documents cover the knowledge necessary to obtain and maintain the recreational, private, and commercial license. This also covers medical certificates and required logbook entries.

Why

Each certificate and medical has different rules. The pilot should know what is required to obtain and maintain the desired certificate as well as the privileges and limitations associated with each certificate. It is also necessary to know how medical certificates work and what training must be logged.

Lesson Details

Checklist

Each airplane has a manufacturer-specified preflight procedure—POH Section 4. Using a different checklist can result in missing equipment and confusion. Checklists ensure that all necessary items for a specific airplane are checked in a logical sequence. Always have the checklist to use as a reference.

> □□CE—failure to use or improper use of a checklist.

Don’t get distracted during the preflight—you may miss items on the checklist or not recognize a discrepancy. If that happens, start at the beginning!

> □□CE—Hazards which may result from allowing distractions to interrupt a visual inspection.

Preflight overview

Preflight procedures move logically around the airplane in order. Begin preflight while approaching the airplane on the ramp—note its appearance, look for obvious problems (gear out of alignment, structural distortions, skin damage, dripping fuel, oil leaks), and remove tie downs, control locks, and chocks upon reaching the airplane.

What to inspect

Inside the airplane

- Check for required documents—AR®OW
- Check the logbooks to ensure required tests/inspections have been completed (Annual, 100hr, Static/Transponder/Altimeter, ELT, ADs)
- Required equipment for the flight (instruments, transponder)
- Instruments, switches, mixture (as listed on checklist)

Outside the airplane

- Inspect all items outside the airplane (structure, controls, engine, propeller, gear, struts, etc.)
- Detect defects by following the checklist and looking for something wrong in each item. Understand what you are looking at/for and what is required for safe/normal operation.

> □□CE—inability to recognize discrepancies to determine airworthiness.

Detecting problems

Visible structural damage

- Dents, cracks, tears that can affect airplane performance
- Leaks, stains—signs of potential problems
- Missing rivets, bolts, etc.
- Nicks, cracks on propeller

Flight controls

- Move freely and correctly, are attached securely and properly
- Flap movement and connection

Fuel

- Quantity—confirm quantity indicated on gauge by a visual inspection and/or fuel stick. Airplane attitude and gauge malfunctions can result in incorrect readings.
- Contamination—100LL (avgas) is blue and has a familiar gasoline scent; Jet-A is clear and has a kerosene scent.
- Using Jet-A in a reciprocating engine will destroy it from detonation (uncontrolled explosive combustion of the fuel/air mixture in the cylinder's combustion chamber).
- Supervise fueling to ensure you get the right type and grade of fuel, and to ensure the fuel caps are in place.
- Do not substitute lower grade of fuel—will result in detonation.
- 80-red; 100LL-blue; 100-green; Jet-A-clear
- Water and other sediment is heavier than fuel and will accumulate in the low points. Usually from condensation in partially filled tanks or bad seals—keep the tanks full to minimize the opportunity for condensation.
- Sediment can arise from dust/dirt entering the tanks.
- Drain fuel from gascolator/tanks and check for color, smell, water, contamination. If you find contaminants, continue draining until they have been removed.

Oil

- Check oil level on oil dip stick to ensure it is at an acceptable amount.
- The plane will use a small amount on each flight—if a large amount is used, there may be a problem.
- Discoloration can indicate contamination.
- Add the type of oil that is called for in the POH.
- Check for leaks under the airplane, inside the cowling, or on the wheel struts.

- CE—failure to ensure servicing with the proper fuel and oil.

Ice and frost

Small amounts of ice and frost can disrupt the airflow over the wing, increasing stall speed and reducing lift—do not fly until you remove the ice/frost. Use a heated hangar, spray deicing compounds, or scrape it off.

Loading and securing

Ensure everything is secure in its place and not moving around—movement could affect the CG and movement of heavy items could damage the aircraft.

> □□CE—failure to ensure proper loading and securing of baggage, cargo, and equipment.

Determining the airplane is safe

Note any discrepancies during the preflight and make sound judgments.The PIC is responsible for determining if the airplane is airworthy and safe; when in doubt, ask someone more experienced.

Don’t attempt to fly if you are uncomfortable or not satisfied that the airplane is safe.

□□Common Errors□□

□□

- Failure to use or the improper use of a checklist.
- Hazards which may result from allowing distractions to interrupt a visual inspection.
- Inability to recognize discrepancies to determine airworthiness.
- Failure to ensure servicing with the proper fuel and oil.
- Failure to ensure proper loading and securing of baggage, cargo, and equipment.

Conclusion

Each certificate and medical has different rules. It is therefore important to know what is required to obtain and maintain the desired certificate as well as the privileges and limitations associated with it. It is also necessary to know how medical certificates work and what training must be logged.

ACS Requirements

To determine that the applicant exhibits instructional knowledge of the elements related to certificates and documents by describing:

1. The training requirements for the issuance of recreational, private, and commercial pilot certificates.
2. The privileges and limitations of pilot certificates and ratings at recreational, private, and commercial levels.
3. Class and duration of medical certificates.
4. Recent pilot flight experience requirements.
5. Required entries in pilot logbook or flight record.