Task V.G: Before Takeoff Check

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Lesson Overview

Objective

The student should develop knowledge of the elements related to taxiing an airplane as required in the necessary ACS.

Reference

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

Key Elements

- Departure brief
- Incursions and hazards

Elements

- Temperatures and pressures
- Positioning the aircraft
- Division of attention
- Checklist
- Go/No-go decision
- Departure brief

- Clearing the takeoff area of hazards
- Avoiding incursions

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 understands the elements involved in a proper, thorough, and safe before takeoff check and can make a safe decision as to whether the airplane is safe to fly and can maintain hazard and incursion avoidance.

Instructor Notes

Introduction

- Overview—review objectives and key ideas.

What — a systematic procedure for checking the engine, controls, systems, instruments, and avionics prior to flight.

Why — a final check before takeoff ensures that the airplane is ready for safe flight before getting into the air.

Temperatures and pressures

Check after taxiing to a position near the takeoff runway (the run-up area) to allow time to warm

up to minimum operating temperatures for lubrication and internal engine clearances. Oil temperature must reach a minimum value (75°).

Scan all engine instruments periodically to ensure they are appropriate for run-up and takeoff.

Positioning the aircraft

Position on a firm surface that is free of debris for the run-up. Position diagonally so that the propeller will not blast anything behind the aircraft, into the wind to prevent overheating and to get more accurate indications. After positioning, allow the aircraft to move forward slightly to straighten the nosewheel. Considerable stress is placed on the nose wheel during the run-up.

□□CE—improper positioning of the airplane.

Division of attention

- Divide attention inside and outside the airplane.
- Pay attention to make sure the aircraft does not move forward unnoticed.

Checklist

Use the manufacturer's before takeoff checklist and follow it item by item. Be critical of the aircraft's performance—determine whether it meets the guidelines in the POH and do not accept deteriorating performance.

□□CE—failure to properly use the appropriate checklist.

Check the controls visually for proper position and movement. Move the controls freely in the full range of positions.

□□CE—an improper check of flight controls.

Go/No-go decision

The PIC is responsible for determining whether the airplane is in a condition for safe flight. Stop at any discrepancy and note its effects—consider whether it is still legal. Return to the ramp for further investigation when in doubt.

Marginal performance may lead to a hazardous condition.

□□CE—improper acceptance of marginal engine performance.

Departure takeoff

Review performance speeds, expected takeoff distance, and emergency procedures.

Announce the speeds

1. VR
2. VX
3. VY

Emergencies

if you lose power on the roll, close the throttle and maintain control with the rudder/brakes. After rotation, land on the remaining runway (~50’ AGL).

□□CE—hazards of failure to review takeoff and emergency procedures.

Clearing the takeoff area of hazards

Visually check the area to make sure there are no aircraft, vehicles, people, livestock, or wildlife.

If at a non-towered airport, announce intentions on CTAF and make a 360° turn in the pattern direction.

Avoiding incursions

- Before moving, clear to the left, right, and center.
- Know where other aircraft are in relation to you.
- **Traffic separation is not ATC’s responsibility.**
- Monitor the appropriate frequencies.
- Repeat all clearances and do not cross hold short lines without clearance.
- If in doubt, wait for the traffic to clear.
- Clear the final approach area before taxiing into the takeoff position.

□CE—failure to avoid incursions and to ensure no conflict with traffic prior to taxiing into the takeoff position.

□□ Common Errors□□

□□

- Failure to properly use the appropriate checklist.
- Improper positioning of the airplane.
- Improper acceptance of marginal engine performance.
- Improper check of flight controls.
- Hazards of failure to review takeoff and emergency procedures.
- Failure to avoid runway incursions and to ensure no conflict with traffic prior to taxiing into the takeoff position.

Conclusion

- Brief review of main points.
- Use the before takeoff checklist to ensure that there are no problems prior to takeoff. Make a safe decision regarding whether to make the flight. Do not ignore runway incursion and hazard avoidance.

ACS Requirements

To determine that the applicant:

1. Exhibits instructional knowledge of the elements of landplane taxiing by describing:
    a. Proper brake check and correct use of brakes.
    b. Compliance with airport/taxiway surface marking, signals, and ATC clearances or instructions.
    c. How to control direction and speed.
    d. Flight control positioning for various wind conditions.
    e. Procedures used to avoid other aircraft and hazards.
    f. Runway incursion avoidance procedures.
    g. Procedures for eliminating pilot distractions.
    h. Use of taxi chart during taxi.
    i. Airport, taxiway, and runway position situational awareness.
    j. Additional taxiing operations concerns at a non-towered airport.
2. Exhibits instructional knowledge of common errors related to landplane taxiing by describing:
    a. Improper use of brakes.
    b. Improper positioning of the flight controls for various wind conditions.
    c. Hazards of taxiing too fast.
    d. Hazards associated with failure to comply with airport/taxiway surface marking, signals, and ATC clearances or instructions.
    e. Hazards of becoming distracted while taxiing.
    f. Hazards associated with failing to adhere to sterile cockpit procedures.
3. Demonstrates and simultaneously explains landplane taxiing from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to landplane taxiing