PRIVATE PILOT

IV. AREA OF OPERATION: TAKEOFFS, LANDINGS AND GO-AROUNDS

A. TASK: NORMAL AND CROSSWIND TAKEOFF AND CLIMB

OBJECTIVE

To determine that the applicant:

1. Exhibits knowledge of the elements related to a normal and crosswind takeoff, climb operations and rejected takeoff procedures.
2. Positions the flight controls for the existing wind conditions.
3. Clears the area; taxies into takeoff position and aligns the airplane on the runway centerline.
4. Retracts the water rudders as appropriate (ASES) and advances the throttle smoothly to takeoff power.
5. Establishes and maintains the most efficient planning / lift off attitude and corrects for porpoising and skipping (ASES).
6. Lifts off at the recommended airspeed (V_R or V_{LO}) and accelerations to V_Y.
7. Establishes a pitch attitude that will maintain V_Y +10/-5 knots.
8. Retracts the landing gear and flaps as appropriate after a positive rate of climb is established and no usable runway remains.
9. Maintains takeoff power and V_Y +10/-5 knots to a safe maneuvering altitude.
10. Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
11. Complies with noise abatement procedures.
12. Completes the appropriate checklist.

NOTE: If a crosswind condition does not exist, the applicant's knowledge of crosswind elements shall be evaluated through oral testing.

ELEMENTS

1. Know the predicted takeoff performance figures from the FAA-Approved AFM/POH.
2. Be familiar with airport layout, including runway lengths and hold short operations.
3. Use FAA-Approved AFM/POH takeoff configurations.
4. Use the Before Takeoff Checklist.
5. Select runway based on wind for slowest groundspeed and shortest groundroll.
6. Clear the takeoff path of other aircraft.
7. Announce intentions on CTAF or receive takeoff clearance from the tower controller.
8. Taxi onto the runway, line up on the centerline with the nosewheel centered and set HI or HSI.
8. Select a ground reference point aligned with runway for directional control.
9. Fully turn the yoke in the direction of the wind.
10. Add maximum power smoothly and monitor the engine instruments for malfunctions
11. Use whatever rudder pressure is required to counteract the left turning tendencies.
12. Gradually roll out the full aileron as control surfaces become more effective.
13. Pitch up at or above V_R. Lift downwind wheel (lower upwind wing) and roll on upwind wheel using coordinated aileron (upwind aileron up) and opposite rudder (deflected downwind).
14. Establish sideslip with the upwind wing lowered until positive rate of climb is attained.
15. Establish the pitch attitude for V_Y and maintain V_Y +10/-5 knots during the climb.
16. Retract the landing gear and flaps (as appropriate) after a positive rate of climb is established and no usable runway remains.
17. As positive rate of climb is established, transition to a wings-level wind correction (crab) angle.
18. Maintain takeoff power until at least 500 feet above the surrounding terrain or obstacles.
19. Complete the After Takeoff Checklist or the Climb Checklist.

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COMMON ERRORS

a. Improper runway incursion avoidance procedures.
b. Improper use of controls during a normal or crosswind takeoff.
c. Inappropriate liftoff procedures.
d. Improper climb attitude, power setting and airspeed (V_Y).
e. Improper use of checklist.

REFERENCES

1. FAA-H-8083-3A, Airplane Flying Handbook, Chapter 5.
2. POH / AFM, Pilot Operating Handbook / FAA-Approved Airplane Flight Manual.