PRIVATE PILOT

VI. AREA OF OPERATION: GROUND REFERENCE MANEUVERS
B. TASK: S-TURNS

OBJECTIVE

To determine that the applicant:

1. Exhibits knowledge of the elements related to S-turns.
2. Selects a suitable ground reference line.
3. Plans the maneuver so as to enter at 600 to 1000 feet (180 to 300 meters) AGL, perpendicular to the selected reference line.
4. Applies adequate wind-drift correction to track a constant radius turn on each side of the selected reference line.
5. Reverses the direction of turn directly over the selected reference line.
6. Divides attention between airplane control and the ground track while maintaining coordinated flight.
7. Maintains altitude +/-100 feet (30 meters), and maintains airspeed +/-10 knots.

ELEMENTS

1. The airplane's ground track should describe semicircles of equal radii on each side of a selected straight line on the ground by correcting for changing wind drift in turns.
2. Select straight ground reference line that lies 90° to the wind direction.
3. Approach from the upwind side, at selected altitude, on a downwind heading (fastest groundspeed for the airspeed flown).
4. When crossing the reference line, start the turn.
5. Roll rate and bank angle should be the greatest during the first turn since the groundspeed (and the rate of departure from the reference line) is the greatest.
6. Reduce the bank angle as the 180° turn is flown, arriving at a minimum bank angle (at the minimum groundspeed) when over the reference line.
7. Once over the reference line, start the turn in the opposite direction.
8. Roll rate and bank angle should be the least during the second turn since the groundspeed (and the rate of departure from the reference line) is the least.
9. Increase the bank angle as the opposite 180° turn is flown, arriving at a maximum bank angle (at the maximum groundspeed) when over the reference line.

COMMON ERRORS

a. Failure to adequately clear the area.
b. Faulty entry procedure.
c. Poor planning, orientation, or division of attention.
d. Poor coordination.
e. Poor timing in beginning and recovering from turns.
f. Uncoordinated flight control application.
g. Improper correction for wind drift.
h. An unsymmetrical ground track.
i. Failure to maintain selected altitude or airspeed.
j. Inadequate visual lookout for other aircraft.
k. Selection of a ground reference line where there is no suitable emergency landing area within gliding distance.

REFERENCES

1. FAA-H-8083-3A, Airplane Flying Handbook, Chapter 6.