Chandelles

Commercial Performance Maneuver
Dual – Local (1.5 hours)

Lesson Objectives

- Achieve a maximum performance climbing turn from straight-and-level flight to 180° wings level, nose high at Minimum Controllable Airspeed (MCA)
- Continue developing the skills of energy management and flight by visual references
- Maintain coordination and orientation
- Appreciate the dynamic factors of the maneuver (changing pitch and bank) and how they relate to energy

Content

Review

- Airplane Flying Handbook Chapter 9, pages 5-6
- Airmen Certification Standards for this procedure and similar

Steps

- Prepare for maneuvering (clearing turns, communication, etc.)
- Pick a 90° reference point off the left wing
- Smoothly roll into 30° of left bank
- Smoothly apply full power
- Begin gradually pitching up, achieving matching pitch up attitude at the 90° reference point
- Maintain attitude while slowly rolling out bank
- Place the right wing on the 90° reference point when aircraft has made a full 180° turn
- Repeat in the other direction

Completion Standards

- Select an altitude that will allow the maneuver to be performed no lower than 1,500 feet above ground level (AGL)
- Establish the appropriate entry configuration, power, and airspeed.
- Establish the angle of bank at approximately 30°.
- Simultaneously apply power and pitch to maintain a smooth, coordinated climbing turn, in either direction, to the 90° point, with a constant bank and continuously decreasing airspeed.
- Begin a coordinated constant rate rollout from the 90° point to the 180° point maintaining power and a constant pitch attitude.
- Complete rollout at the 180° point, ±10° **just above a stall airspeed**, and maintaining that airspeed momentarily avoiding a stall.
- Resume a straight-and-level flight with minimum loss of altitude

Common Errors

- Factors the result in less than maximum performance
    - Overbanking → reaching 180° too quickly
    - Underbanking → stalling before reaching 180°
    - Removing all the bank before 180°
    - Too little pitch → suboptimal climb
    - Too much pitch → stall before 180°
- General Concerns
    - Failure to clear the area or scan for traffic
    - Reliance on instruments
    - Poor coordination (slipping or skidding)