XI.C. Power-Off Stalls

About: Practiced from normal and full flap landing approach conditions including turns (15-20° bank) to help the pilot recognize the potential for an accidental stall during landing.

TSW: Become familiar with the conditions that produce power-off stalls and will develop the habit of taking prompt preventative and/or corrective action when in a power-off stall.

Procedure:

1. No lower than 1500 AGL for recovery: 2x 90 degree clearing turns
2. Reduce power to decent power (1500 RPM)- carb heat
3. Extend landing flaps
4. Establish normal decent speed- TRIM
5. Power to idle
6. Apply back pressure to maintain altitude
    a. If turning, maint coordination with rudder and stall within first 90°
7. Announce "imminent stall" at stall warning horn. Announce "stall" when stall occurs

Recovery

8. Release back pressure on yoke
9. Full power
10. Wings level with coordinated rudder and aileron
11. Retract flaps to 20° establish climb pitch attitude
12. Retract flaps in 10° increments accelerating through Vy
13. Stabilize climb out at Vy

Discussion Points:

1. Recover promptly after the stall occurs by simultaneously decreasing pitch attitude, applying full power, and leveling the wings using coordinated aileron and rudder. Return to straight and level flight attitude with minimal loss of altitude.
    a. Excessive pitch down can result in excessive alt loss
    b. Insufficient pitch down will not break stall or initiate secondary stall.
2. Retract flaps after positive rate of climb is established, Accelerate to Vy before final flap retraction.
3. Stall occurs when the critical angle of attack is exceeded (~15-20°)
4. Stall speed in a turn is higher than in level flight. In a turn wings must produce additional lift to maintain alt. This lift comes from additional back pressure which increases the angle of attack.
5. As weight increases stall speed increases. Greater weight means more lift required to maint level flight. This comes from increasing angle of attack.
6. Forward CG = Higher stall speed. Higher tail downforce required to maint level flight, thus AOA must be increased to counter additional load.

Common errors:

1. Not reducing power initially to slow the airplane to a typical takeoff and departure airspeed.
2. Increasing the pitch attitude too much, too quickly, resulting in an excessive steep nose-up attitude and an unrealistic situation.
3. Rough and/or uncoordinated use of flight controls.
    a. Not using rudder to assist in maintaining initial directional control.
    b. All aileron and no rudder will only aggravate the situation, especially before the wings have had time to regain sufficient airflow.
4. Poor stall recognition and delayed recovery **(recover at first indication)**
5. Secondary stall during recovery **(don't aggressively lift nose)**

Evaluations/ Standards:

6. Clear the area.
7. Select an entry altitude that will allow the Task to be completed no lower **than 1,500 feet AGL (ASEL) or 3,000 feet AGL (AMEL).**
8. Configure the airplane in the approach or landing configuration
9. Maintain coordinated flight throughout the maneuver.
10. Establish a stabilized descent.
11. Transition smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
12. Maintain a specified heading**, ±10 if in straight flight;** maintain a specified **angle of bank not to exceed 20°, ±10° (Private), ±5° (Commercial),** if in turning flight, while inducing the stall.
13. Acknowledge cues of the impending stall and then recover promptly after a full stall occurs.
14. Accelerates to Vx or Vy speed before the final flap retraction; returns to the normal climb attitude, airspeed, and configuration