Slow Flight

AIR ECHO ALPHA 51, LLC

Objective: Demonstrate the flight characteristics and degree of controllability of the airplane at its minimum flying speed.

Common Errors

- ❑ Failure to establish specified configuration
- ❑ Improper entry
- ❑ Failure to establish & maintain specified airspeed
- ❑ Excessive variation of altitude & heading
- ❑ Improper correction of left turning tendencies
- ❑ Unintentional stall
- ❑ Activation of Stall horn

Completion Standards

- ❑ Adheres to recommended safety precautions
  - Selects appropriate altitude
  - Clears the area
- ❑ Establish and maintain airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning
- ❑ Understands the method for establishing slow flight
- ❑ Accomplish coordinated straight-and-level flight, turns, climbs, and descents without a stall warning
- ❑ Maintains altitude +- 100ft, heading +- 10°, airspeed +10/-0, bank +- 10°
- ❑ Uses Checklists

PAVE &Preflight Discussion

20- Min

- ❑ The **Pilot** and Crew
  - I'M Safe Checklist
  - Delegate Duties
- ❑ The **Plane**
  - POH - Stall speeds, CG location, Weight, Configuration (flaps) & bank angles
- ❑ The En**vironment**
  - Weather Briefing
  - The effects of environmental elements on aircraft performance related to slow flight (turbulence, wind shear, and high-density altitude)
  - Collision Avoidance
- ❑ **External** Pressures
  - Factors & situations that could lead to an inadvertent stall horn activation or stall
  - Distractions, improper task management, loss of situational awareness, or disorientation.
  - Limitations of stall warning horns/speeds
- ❑ Slow flight is a part of NORMAL flight operations, and includes the speeds a pilot might use in the take-off, approach and landing sequence. Flight between the stall warning and up to the critical angle of attack moves into ABNORMAL flight operations.
- ❑ Stall horn activation: 5-10kts above a stall
- ❑ Recognizing slow flight
  - Vision, hearing, kinesthesia, control pressures, warning horns & IAS
- ❑ Left turning tendencies
  - High power settings & AOA
  - Low airspeeds
- ❑ Forces of Flight – Drag vs Thrust (power)
  - Parasite drag is created by the airframe's resistance to forward motion - the faster you fly, the greater the parasite drag.
  - **Induced drag** is a byproduct of lift, and it's **greatest at high angles of attack and slow airspeeds.**
  - How to overcome drag? Add more power! Yet, Power has a limit.

Flight Maneuver- Slow Flight

20- Min

- ❑ Clear the area
  - Altitude: Task completed > 1,500 ft
  - Airspeed: @ or below V_A
  - Airspace: E or G
  - Area Clear: No traffic
- ❑ The Set-up
  - Choose a ground reference point and/or set heading bug to note starting heading
  - Complete the Before Landing Checklist
    - Landing Configuration
      - Reduce throttle & adjust pitch to maintain altitude & reduce airspeed
      - Airspeed below V_{LE} - gear extended
      - Airspeed below V_{FE} - lower flaps
      - Carb Heat - On
  - Adjust pitch & power (throttle) and trim to maintain approach airspeed & altitude
- ❑ Slow Flight
  - Continue to reduce airspeed until 5-10kts above the stall horn activation
  - Increase throttle (power) & adjust pitch to maintain altitude and airspeed
  - Apply right rudder to compensate for turning tendencies
  - While in Slow Flight demonstrate Straight & Level flight, Shallows turns, Descents & Climbs (if able)
- ❑ The Recovery
  - **Decrease AOA**
  - Throttle - smoothly increase power (if able)
  - Accelerate to V_X or V_Y
  - Directional control - Rudder
  - Carb heat- Off,
  - @ V_X or V_Y & positive rate-of-climb - retract the landing gear & flaps in increments
  - Return to starting altitude, heading, and airspeed

Traffic Pattern

15-Min

- ❑ Normal Take-off
- ❑ Normal Landing
- ❑ Slow flight is a part of NORMAL flight operations. Note the phases of the take-off, approach and landing sequence where the aircraft is in slow flight.