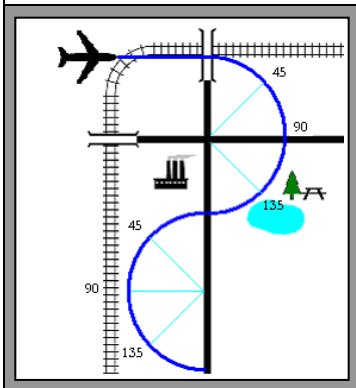
Lazy 8s

AIR ECHO ALPHA 51, LLC.

Objective: Develop coordination of controls through a range of airspeeds and altitudes so that certain accuracy points are reached with planned attitude and airspeed. The maneuver helps develop a subconscious feel, planning, orientation, coordination, and speed sense.



Common Errors

- ❑ Failure to clear the area
- ❑ Poor selection of reference points
- ❑ Uncoordinated controls
- ❑ Unsymmetrical loops resulting from poor planning of pitch & bank
- ❑ Loss of orientation
- ❑ Poor control at the top of each climb segment resulting in the pitch rapidly falling through the horizon
- ❑ Airspeed or bank angle standards not met
- ❑ Inadvertent stall
- ❑ Not scanning for other traffic during the maneuver
- ❑ Performing by reference to the flight instrument rather than visual references

Completion Standards

- ❑ Adheres to recommended safety precautions & divides attention between aircraft control and orientation
- ❑ Selects proper altitude & reference points
- ❑ Accomplishes the specified pitch & bank attitudes @ the reference points:
  * 30° bank at the steepest point
  *Constant change of pitch, roll rate and airspeed
  *At 180° point: altitude ±100 ft., airspeed ±10 kts, heading ±10° from entry altitude

Preparation for Flight & Preflight Discussion

20- Min

- ❑ The **Pilot** & Crew
  I'M Safe Checklist & Delegate Duties
- ❑ The **Plane**
  POH - Stall speeds, CG location, Weight, configuration & bank angle
- ❑ The En**vironment**
  Weather Briefing
  The effects of environmental elements on aircraft performance related to stalls (turbulence, wind shear, and high-density altitude)
  Effects of wind speed, direction, shear or gusts on ground tract
- ❑ **External** Pressures
  Aerodynamics associated with climbing & descending turns
  Loss of vertical component of lift
  Increased load factor
  Overbanking tendency
  Left turning tendencies
  Limitations of stall warning horns/speeds
  Factors & situations that could lead to an inadvertent stall
  Distractions, improper task management, loss of situational awareness,
  Coordinated and uncoordinated flight
- ❑ Energy management
  ΔPitch, power & bank = ΔAirspeed & altitude
- ❑ Rate and radius of turn
  Function of airspeed & angle of bank
  As airspeed ↓ the rate of turn ↑
- ❑ Left vs. Right turns - turning tendencies
  As AOA ↑ left turning tendencies ↑
- ❑ Load Factor & Stall speed
  Load factor in 30° bank = 1.15 G's

Bank	G's
0°	1
30°	1.155
45°	1.414
60°	2

The stall speed increases as the square root of the G's applied

- ❑ Inadvertent stalls while turning
  Reduce AOA before leveling the wings
- ❑ Spin Awareness
  Cause & recovery

Flight Maneuver – Lazy 8

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
  Select prominent reference points at 0°, 45°, 90°, 135°and 180° for each turn & note starting altitude
  Aircraft Configuration
  Flaps & Gear – Up
  Props –full forward
  Throttle –Set for S&L and V_A
- ❑ The Lazy 8
  A lazy eight consists of two 180° turns, in opposite directions, while making a climb & descent in a symmetrical pattern
- ❑ Reference points 0° -> **45°**
  Slowly enter a climbing turn at a rate to achieve **15° Bank Angle** at the **45° point**
  Apply back-elevator pressure to increase the **Pitch** rate to attain the **Highest Attitude** at the **45° point**
- ❑ Reference points 45° -> **90°**
  Continue increasing **Bank Angle** to achieve **30°** of bank at the **90° point**
  Slowly decrease pitch to reach a **Level Pitch Attitude** at the **90°point**
  Airspeed at its min (5 -10 kts above stall speed)
- ❑ Reference points 90° -> **135°**
  Slowly enter a descending turn rolling out at rate to achieve **15° Bank Angle** at the **135° point**
  Reduce back-elevator pressure to decrease the Pitch rate to attain the **Lowest Pitch Attitude** at the **135° point**
- ❑ Reference points 135° -> **180°**
  Continue decreasing **Bank Angle** to achieve **Wings Level** at the **180° point**
  Adjust pitch attitude to attain a **Level Pitch Attitude** at the **180° point** returning to the starting altitude, airspeed & heading
  Upon arriving at **180° point**, a climbing turn should be started in the opposite direction to complete the second half of the lazy eight