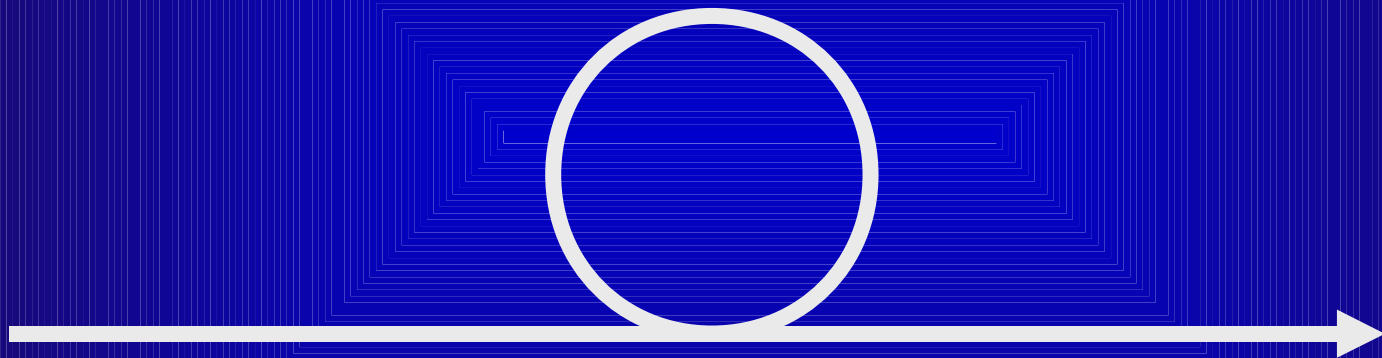# Aerobatic Flight

The Loop

Objective

♦ To fly the aircraft completely through 360° pitch and loop the aircraft.
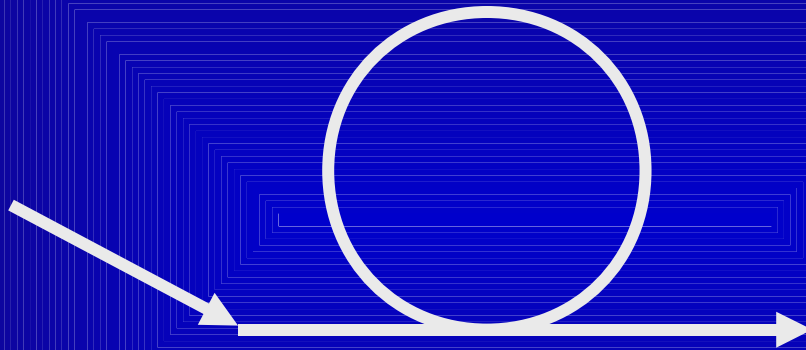
Considerations

- ♦ A perfect loop in a high performance aircraft would be executed from straight and level.

- ♦ Due to the low performance of training aircraft this is not possible.

Considerations

- We must gain enough energy and expend this at a high enough rate to fly over the top of the loop.

- If attempted at an acceleration rate below the minimum required, the aircraft will run out of speed at the top of the manoeuvre and stall.

Considerations

"G"

- In order to fly a circular loop we must:
- Maintain the rate of pitch / looping (constant)
- Establish 3.5g on entry and exit, and approximately +ve 0.5g at the top
- First time that you will be exposed to high G.

Forces in a Typical Loop
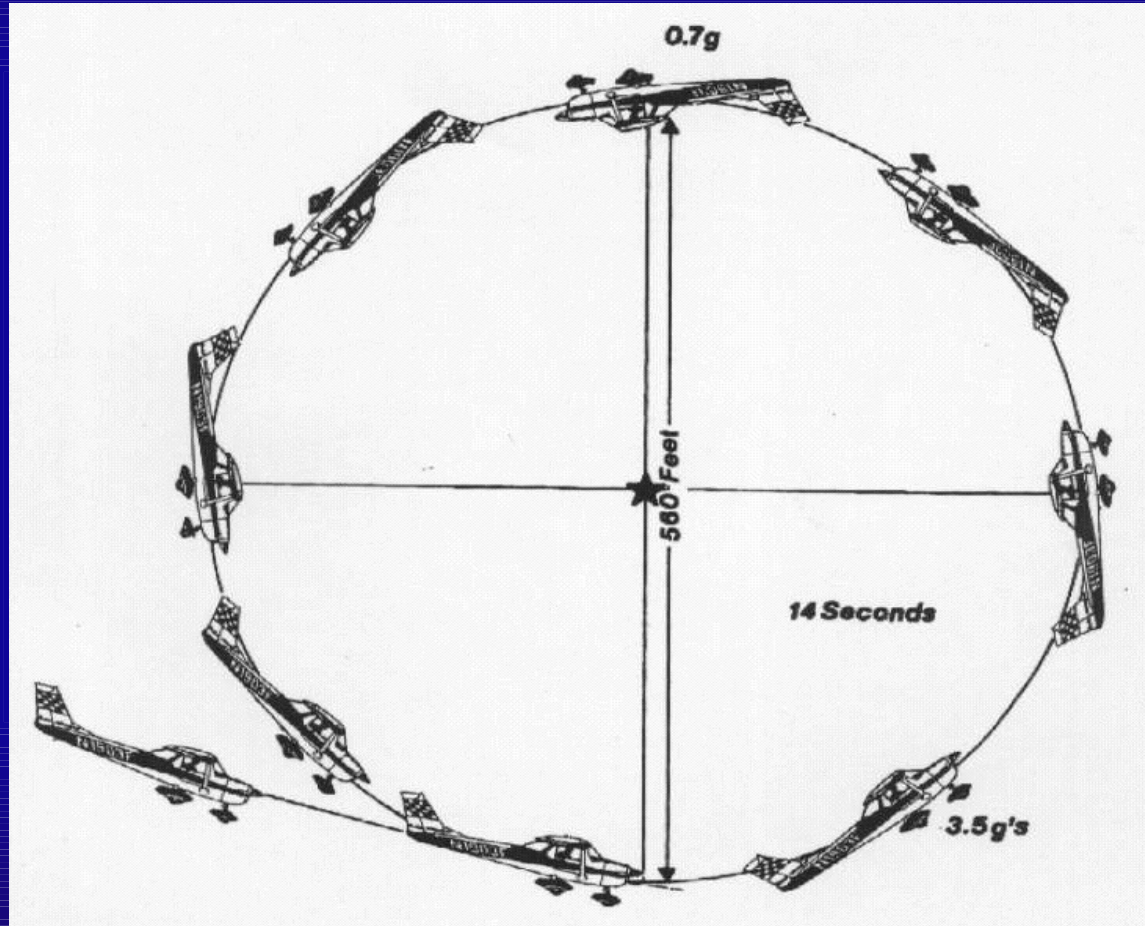
Engine Handling

♦ Power (RPM)   Smooth movements (red line)

♦ Mixture   Full rich

♦ Carb heat   Normal use

♦ T's & P's   Monitor

Airmanship/ Human Factors

- IMSAFE – LOOKOUT– HASELL-HELL
- Use well defined ref points and features
- Flaps up
- Load factor, airspeed and power limits (AFM)

Airmanship/ Human Factors

Entry

- Select line feature & reference point
- Lower nose to gain entry airspeed:
  - Left Rudder -Reduce throttle as required RPM
- Set entry attitude
- Keep Straight
- At entry speed (ref A/C flight manual)
- Smooth & positive pitch-up to 3.5g (balance)
- Check wings level through horizon
- Look to the wing tip to ensure a constant pitch rate
- Full power approaching vertical: Right rudder

Air Exercise

Approaching and at the Top

- Head back and search for the horizon
- Ease back pressure as the nose approaches the inverted attitude (key point) to avoid buffeting and attempting to maintain a symmetrical pattern (positive 'g' throughout) – continued pitch change
- Check wings level while inverted - Right rudder

Air Exercise

Exit

♦ Increase back pressure when the nose is below the inverted horizon

♦ Search for line feature / reference point and check alignment – Left rudder

♦ Reduce power - control RPM

♦ Wings level and keep straight on the ref point

♦ Pitch up to the climbing attitude

♦ Set climb power

Questions