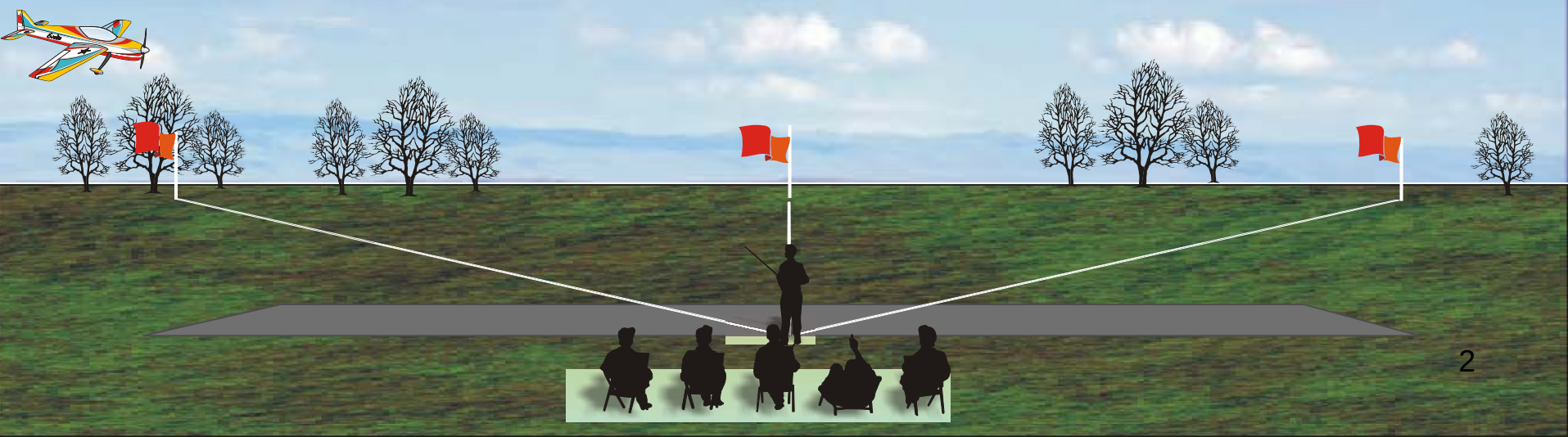
# AMA Precision Aerobatics JUDGES TRAINING PRESENTATION

## 2007-2008

# SCHEMATIC MANEUVER DIAGRAMS

# AMA SPORTSMAN 401



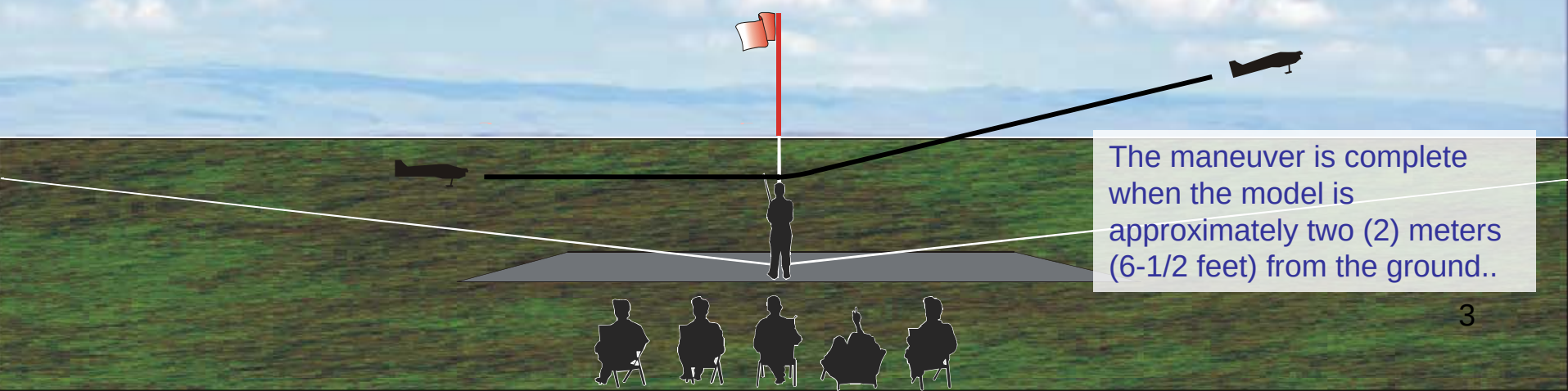
# 401-1 – Takeoff

- It is not necessary for the model to stand still on the ground with the engine running without being held before the takeoff begins.
- It is also not necessary for the model to reach 2 meters in the same distance as the takeoff roll.
- The takeoff should not be downgraded for wing dips caused by air turbulence unless the wings are not immediately leveled.

**Downgrades**

- Model jumps from the ground.
- Retouches the ground after becoming airborne.
- Steep climb angle.
- Gallops in elevation during climb.
- Wings not level at any time.
- Model does not accelerate smoothly.
- Model passes behind the judges line, scored zero (0) points.

The lift off should be within two (2) meters of center for maximum points.

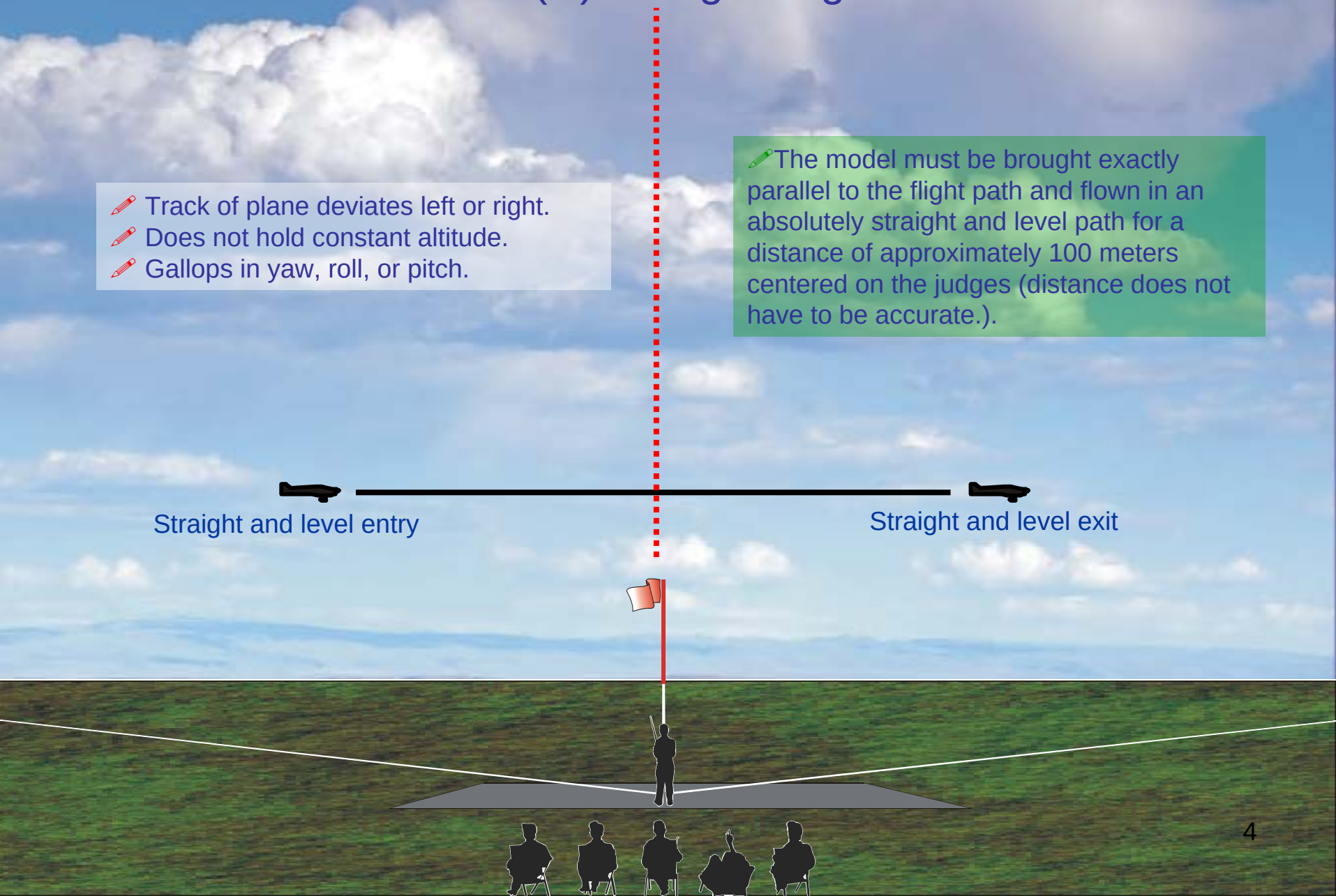


The maneuver is complete when the model is approximately two (2) meters (6-1/2 feet) from the ground..

# 401-2 – (U) Straight Flight Out

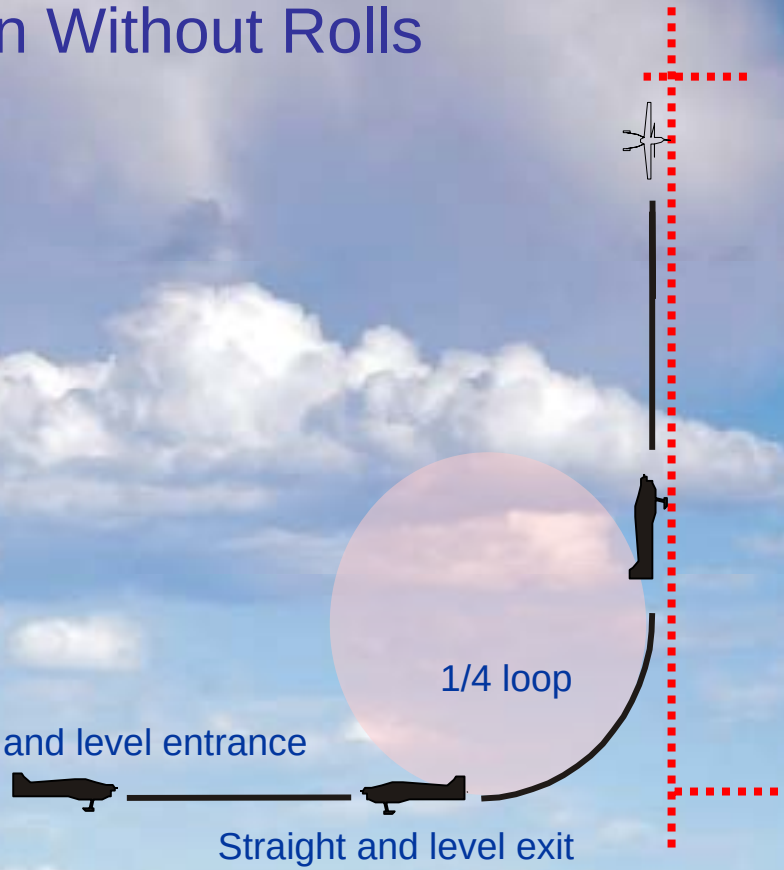
- Track of plane deviates left or right.
- Does not hold constant altitude.
- Gallops in yaw, roll, or pitch.

- The model must be brought exactly parallel to the flight path and flown in an absolutely straight and level path for a distance of approximately 100 meters centered on the judges (distance does not have to be accurate.).

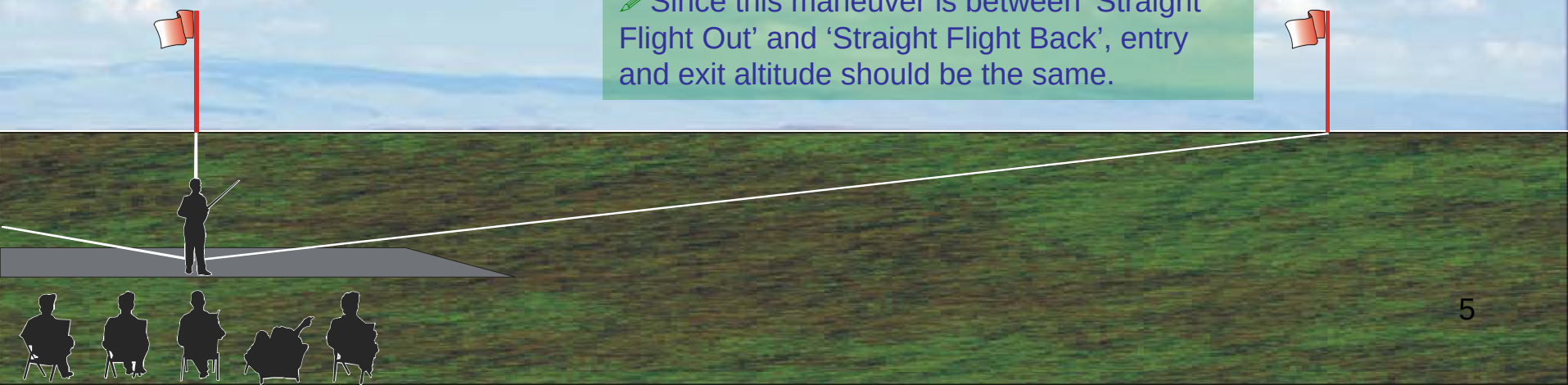


# 401-3 Stall Turn Without Rolls

- Model not level at start and finish.
- Track does not become exactly vertical.
- Model track not vertical at start and finish of stall turn.
- Return path not parallel to entry path.
- Pivot radius greater than 1/2 wingspan.
- Pendulum movement after stall.
- Loop segments not round with same size and radius.



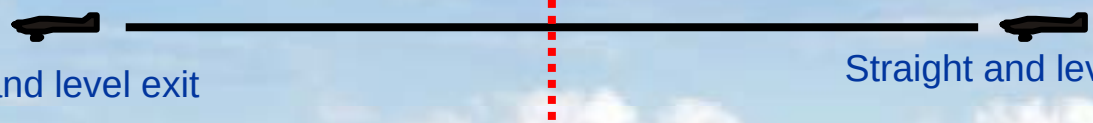

- Since this maneuver is between ‘Straight Flight Out’ and ‘Straight Flight Back’, entry and exit altitude should be the same.



# 401-4 – (D) Straight Flight Back

- Track of plane deviates left or right.
- Does not hold constant altitude.
- Gallops in yaw, roll, or pitch.
- Flight path not along straight flight out path

- The model shall fly back along the same line as the outgoing path.
- The model must be brought exactly parallel to the flight path and flown in an absolutely straight and level path for a distance of approximately 100 meters centered on the judges (distance does not have to be accurate.).

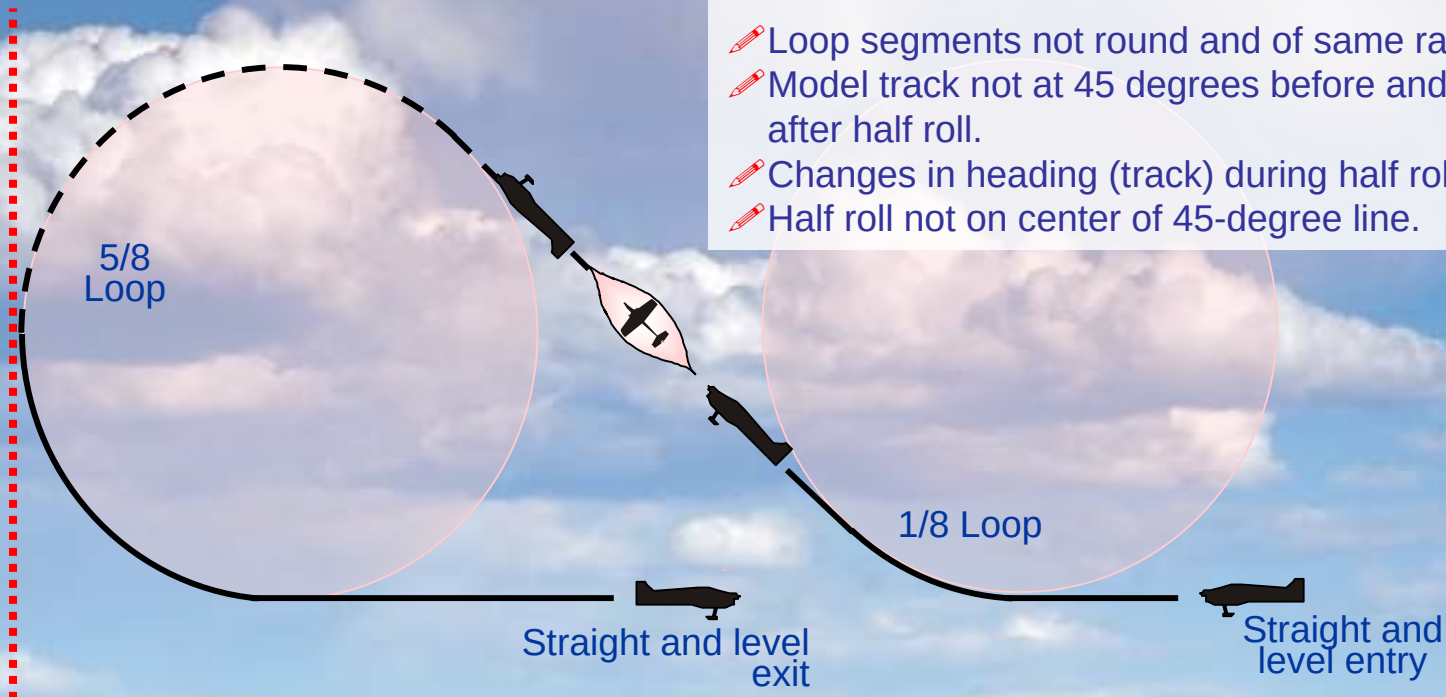


Straight and level exit

Straight and level entry

# 401-5 – Half Reverse Cuban 8

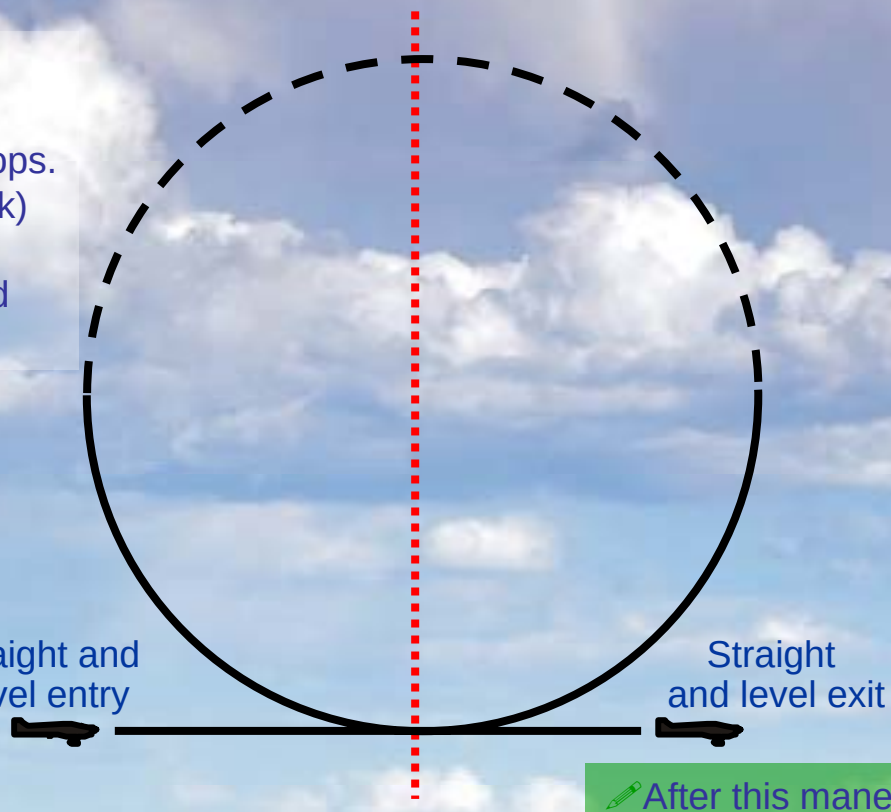
- Loop segments not round and of same radius.
- Model track not at 45 degrees before and after half roll.
- Changes in heading (track) during half roll.
- Half roll not on center of 45-degree line.




**NOTE: In a TA maneuver, entry and exit altitude changes are allowed. To change altitude in this maneuver, the 45 degree line may be extended or truncated. All loop radii must remain equal.**

# 401-6 – (U) Two Inside Loops (Exit Box)

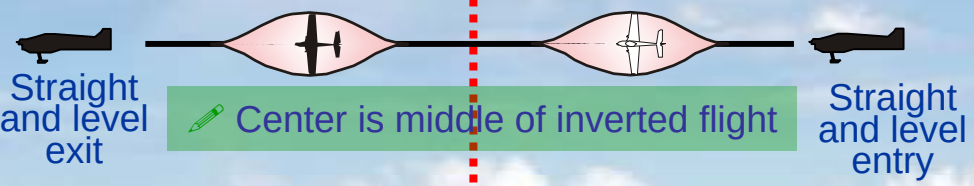
- Loops not round.
- Loops not superimposed.
- Wings not level during loops.
- Changes in heading (track) during loops.
- Exit not same altitude and heading (track) as entry.




- After this maneuver, the pilot **calls the exit** and exits the box**;** executes the turnaround of his choice; and then **calls the entry** and enters the box going downwind.

# 401-7 - (D) Two Point (2 of 2 Pt) Roll

- Model does not hesitate at inverted.
- Roll rates not constant.
- Over or under rotation of rolls, one point per 15-Degree Rule.
- Change is altitude.
- Changes in heading (track).
- Roll rates not constant.

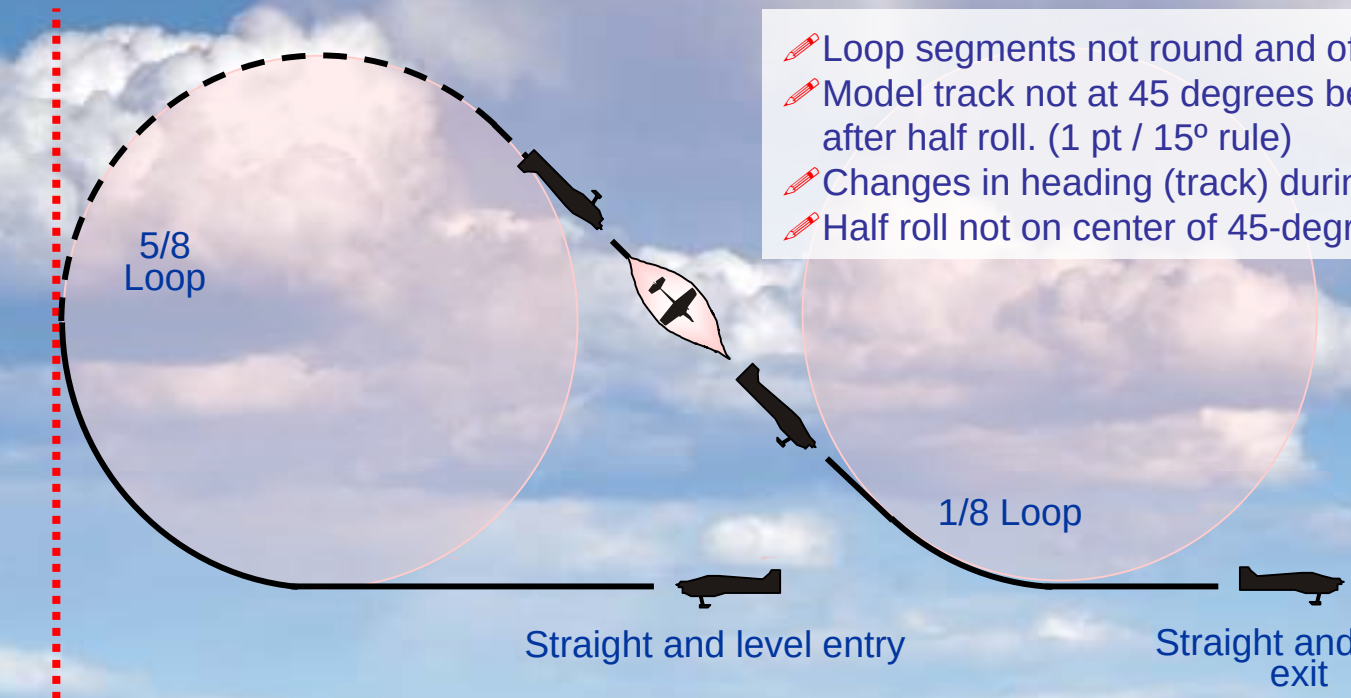


Straight and level exit

- Center is middle of inverted flight

Straight and level entry

# 401-8 – Half Cuban 8

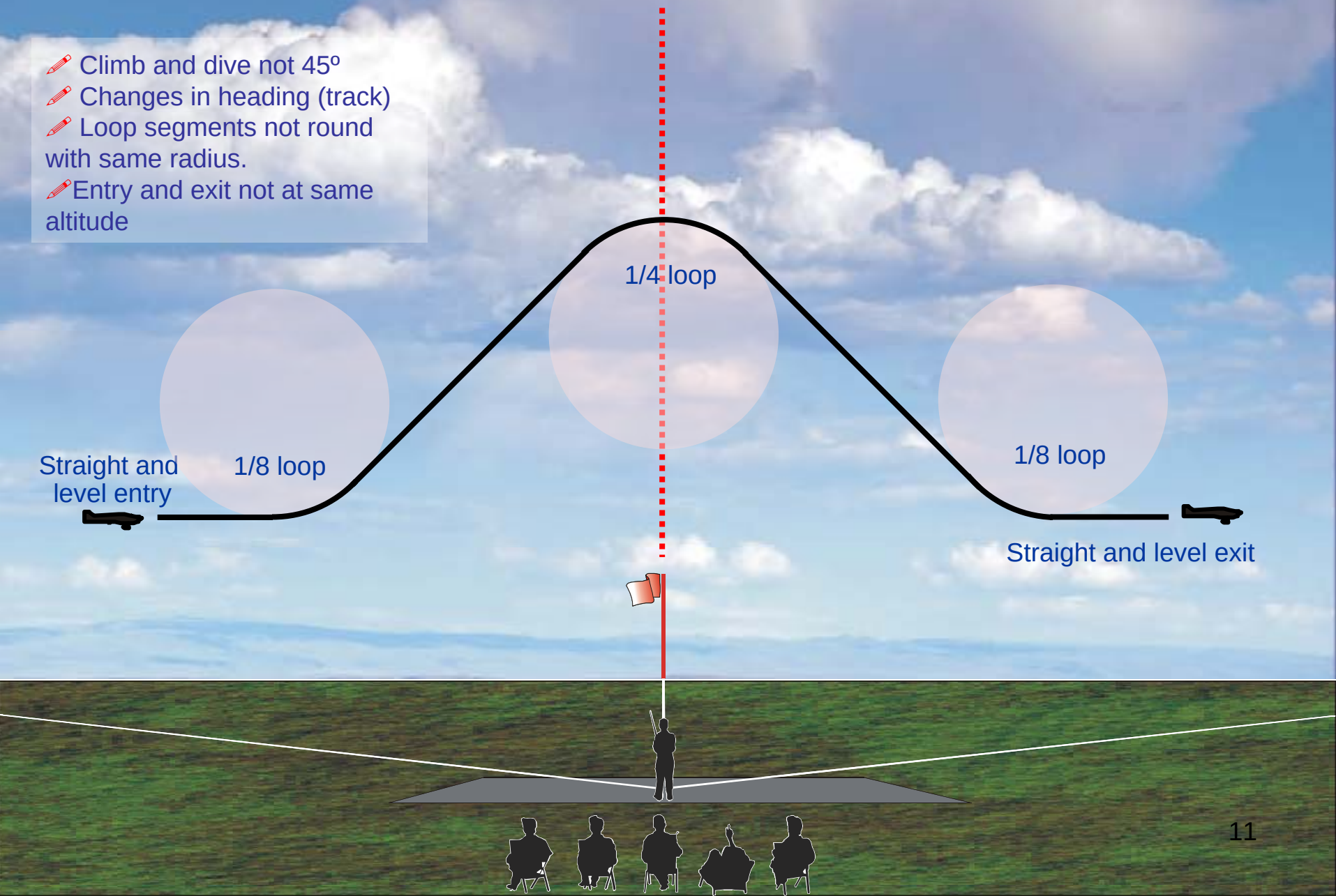



- Loop segments not round and of same radius.
- Model track not at 45 degrees before and after half roll. (1 pt / 15º rule)
- Changes in heading (track) during half roll.
- Half roll not on center of 45-degree line.

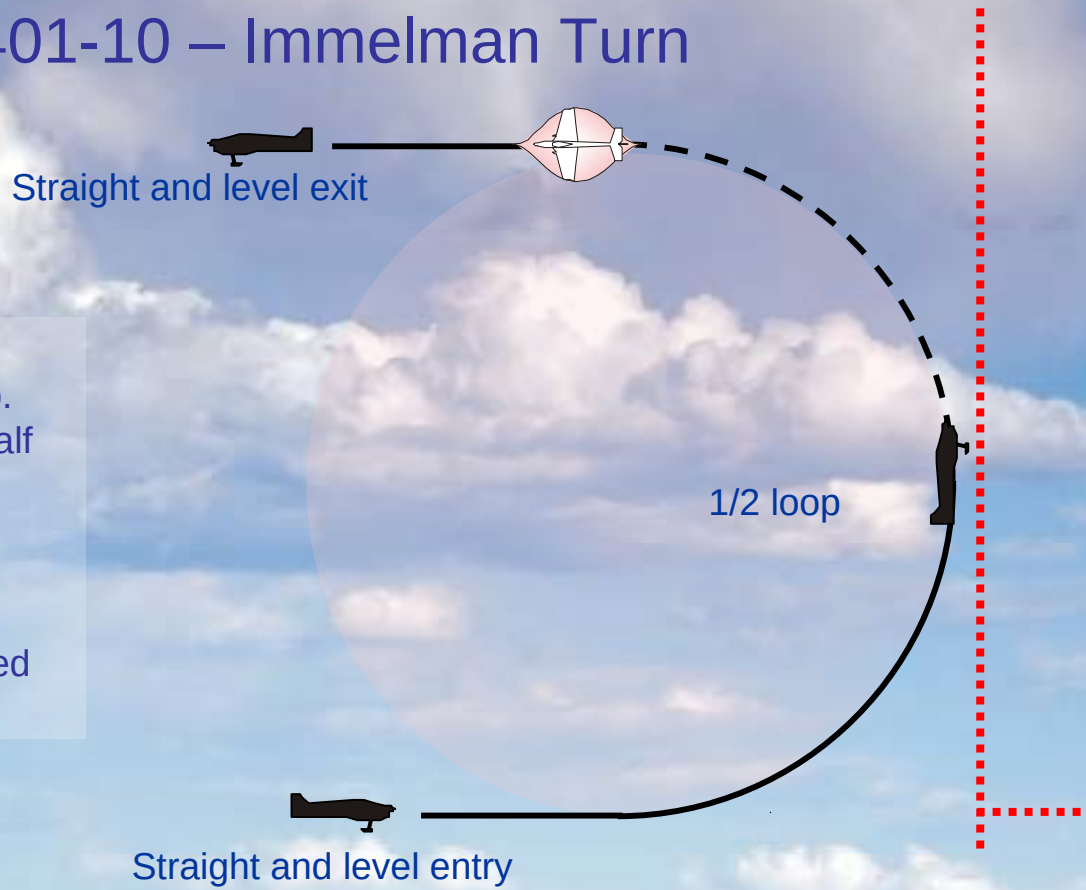
**NOTE: In a TA maneuver, entry and exit altitude changes are allowed. To change altitude in this maneuver, the 45 degree line may be extended or truncated. All loop radii must remain equal.**

# 401-9 – (U) Cobra Without Rolls

- Climb and dive not 45º
- Changes in heading (track)
- Loop segments not round with same radius.
- Entry and exit not at same altitude

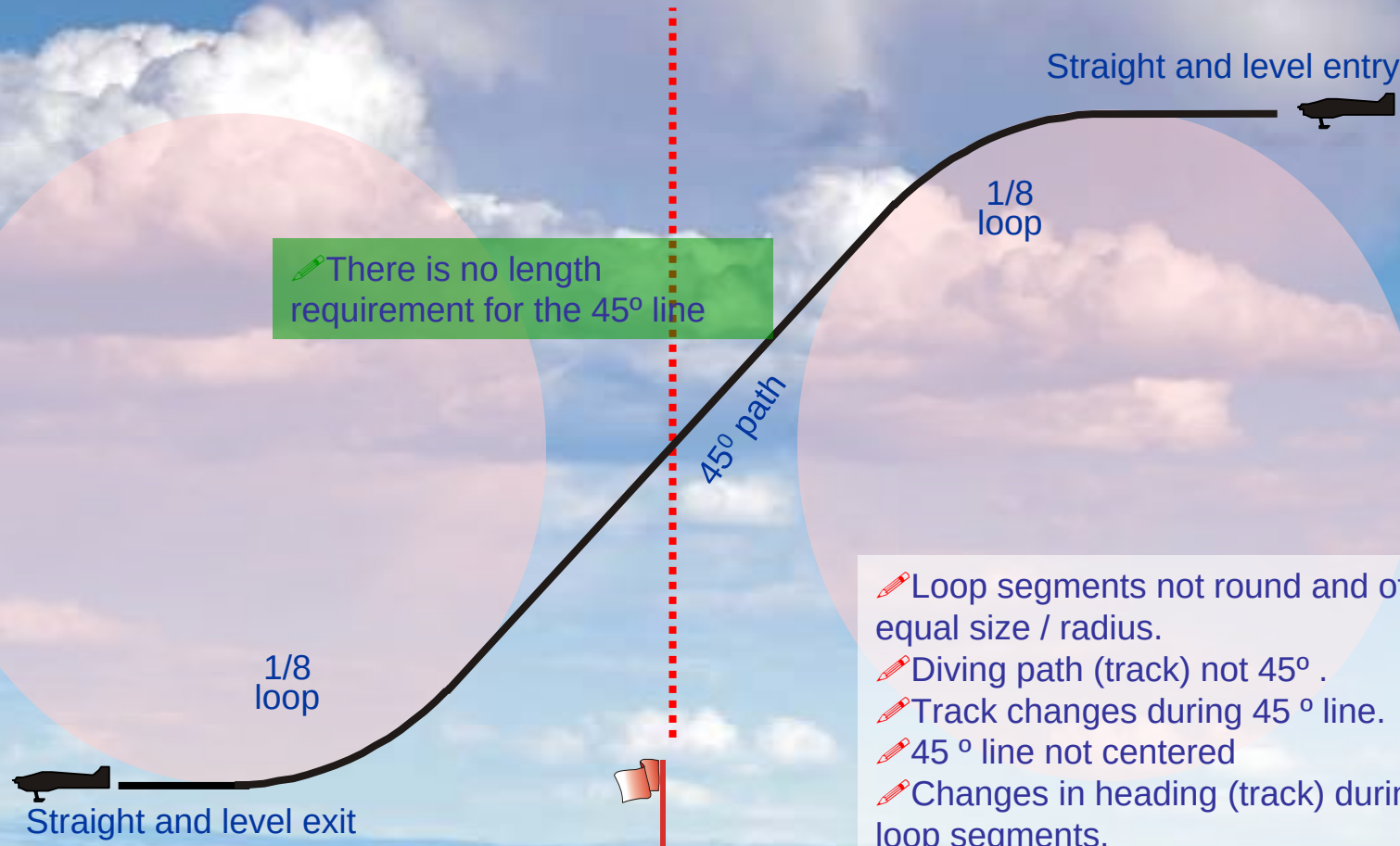


# 401-10 – Immelman Turn




- Model not level at start or finish.
- Roll not immediately after half loop.
- Changes in heading (track) after half loop or prescribed roll.
- Model track does not finish exactly opposite direction of entry.
- Half loop not round.
- Over or under rotation on prescribed roll, one point per 15-Degree rule.

# 401-11 – (D) 45º Down Line (Exit box)

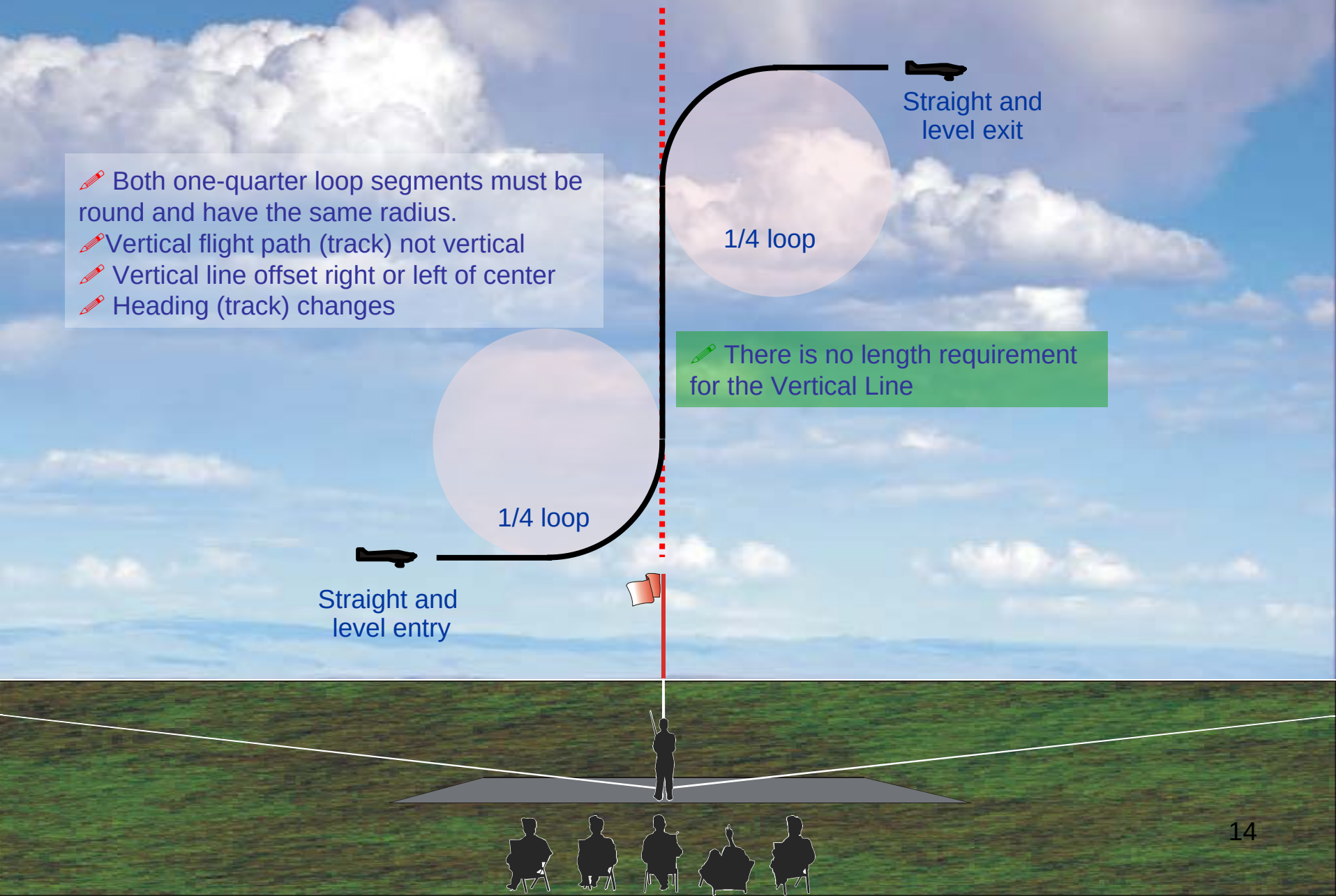



- There is no length requirement for the 45º line

- Loop segments not round and of equal size / radius.
- Diving path (track) not 45º .
- Track changes during 45 º line.
- 45 º line not centered
- Changes in heading (track) during loop segments.

- After this maneuver, the pilot **calls the exit** and exits the box**;** executes the turnaround of his choice; and then **calls the entry** and enters the box going upwind.

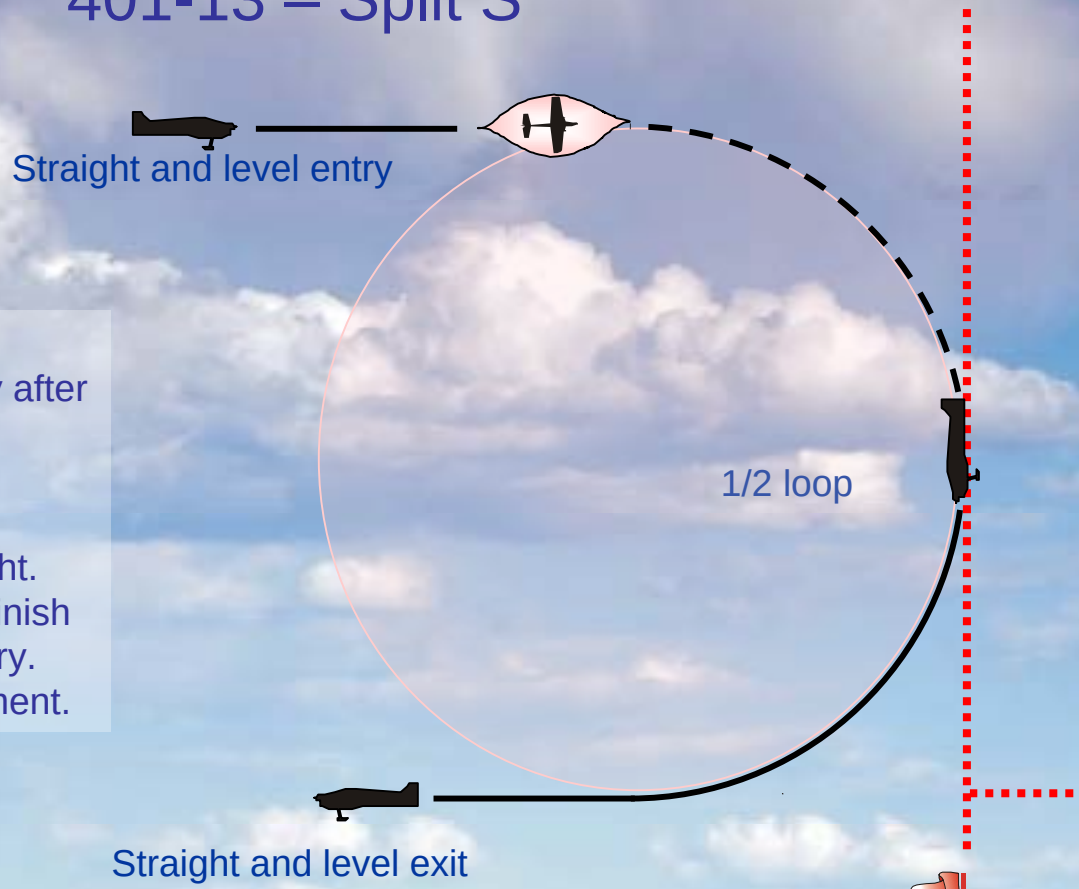
# 401-12 – (U) Vertical Up Line




- Both one-quarter loop segments must be round and have the same radius.
- Vertical flight path (track) not vertical
- Vertical line offset right or left of center
- Heading (track) changes

- There is no length requirement for the Vertical Line

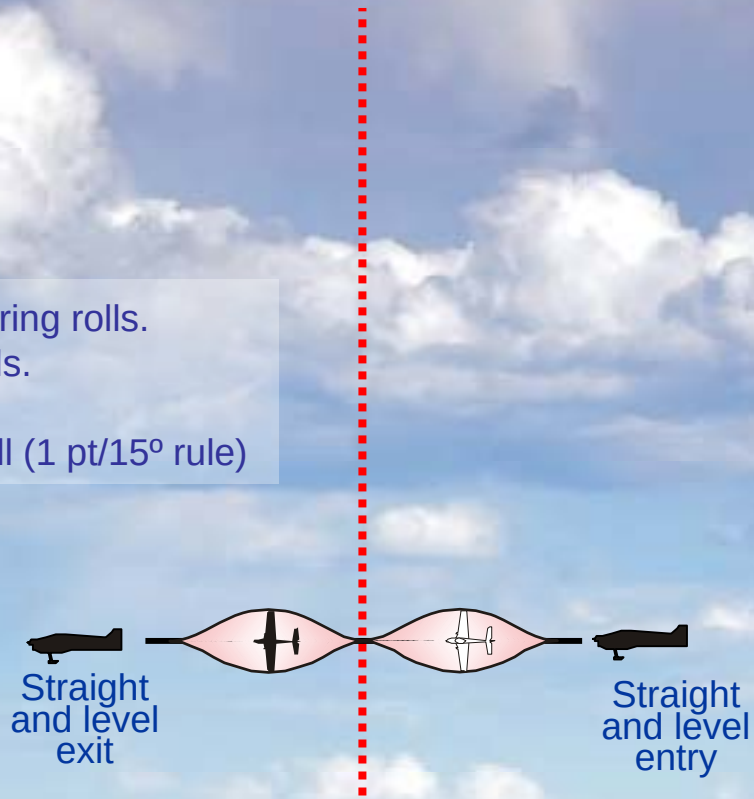
# 401-13 – Split S




- Half roll not 180 degrees.
- Half loop not started immediately after half roll.
- Half loop not constant radius.
- Changes in heading (track)
- One-half (1/2) roll not in level flight.
- Model heading (track) does not finish exactly opposite the direction of entry.
- Wings not level during loop segment.

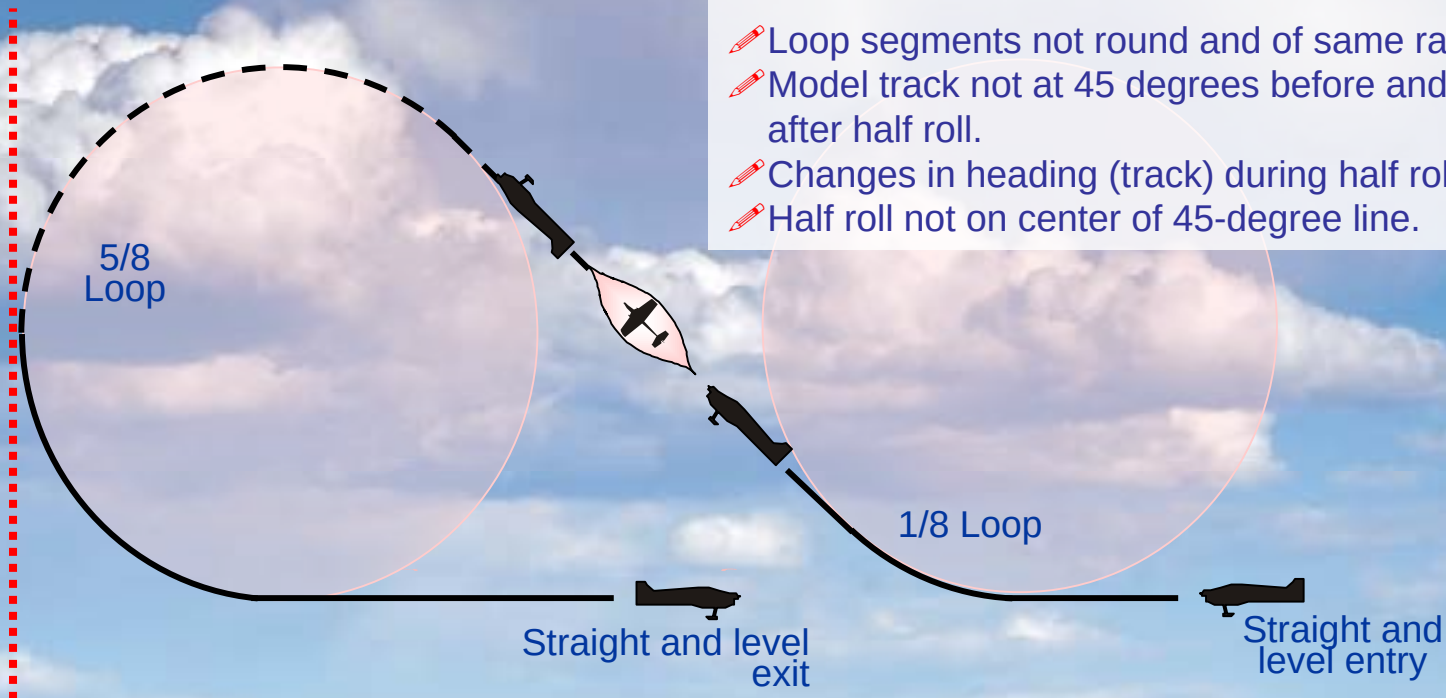
# 401-14 - (D) One Horizontal Roll

- Changes in heading (track) during rolls.
- Changes in altitude during rolls.
- Roll rate not constant.
- Model does do exactly one roll (1 pt/15º rule)



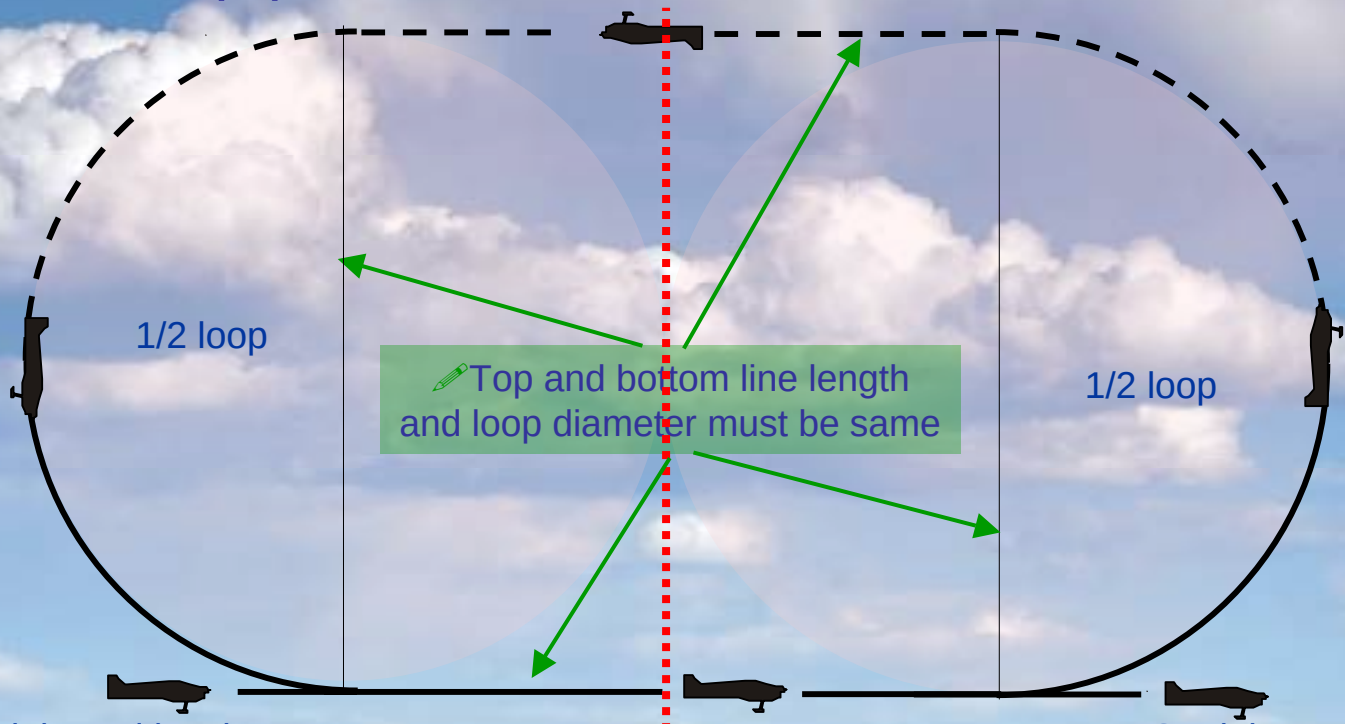
# 401-15 – Half Reverse Cuban 8

- Loop segments not round and of same radius.
- Model track not at 45 degrees before and after half roll.
- Changes in heading (track) during half roll.
- Half roll not on center of 45-degree line.




**NOTE: In a TA maneuver, entry and exit altitude changes are allowed. To change altitude in this maneuver, the 45 degree line may be extended or truncated. All loop radii must remain equal.**

# 401-16 – (D) Double Immelman Turn without Rolls




- Half loops not of constant and equal radius
- Half loops not completed exactly above or below point of commencement of half loops.

- Changes in heading (track) during half loops or lines.
- Entry and exit not at same altitude.

# 401-17 – Landing

**The landing will <u>not</u> be downgraded if:**

- The model rolls to a controlled stop within 10 meters.
- Wing dips which are caused by air turbulence unless they are not immediately corrected.
- The pilot “slips to a landing” to handle a crosswind condition in which case a wing will be low
- Displacement of the touchdown point left or right as long as the landing is in the landing zone

- Model passes behind the judges line, zero (0) points.
- Model impacts the runway due to lack of flare.
- Model bounces.
- Changes in track.
- Model ends on its back, zero (0) points.
- Model lands outside landing zone (but still on runway).
- If any undercarriage retracts before the landing is complete, zero (0) points.
- Aircraft “porpoises” and/or wanders during approach or flare.
- Aircraft lands outside the landing area or runway, zero (0) points.
- Aircraft touches down while not straight to runway and ground track.

Landing begins when the model is approximately two (2) meters (6-1/2 feet) from the ground.

Landing **<u>zone</u>** (white) and Landing **<u>area</u>** **(**green) shown below.

- Landing **<u>zone</u>** is 30 m wide and normally the width of the runway BUT not more than 30 M deep.