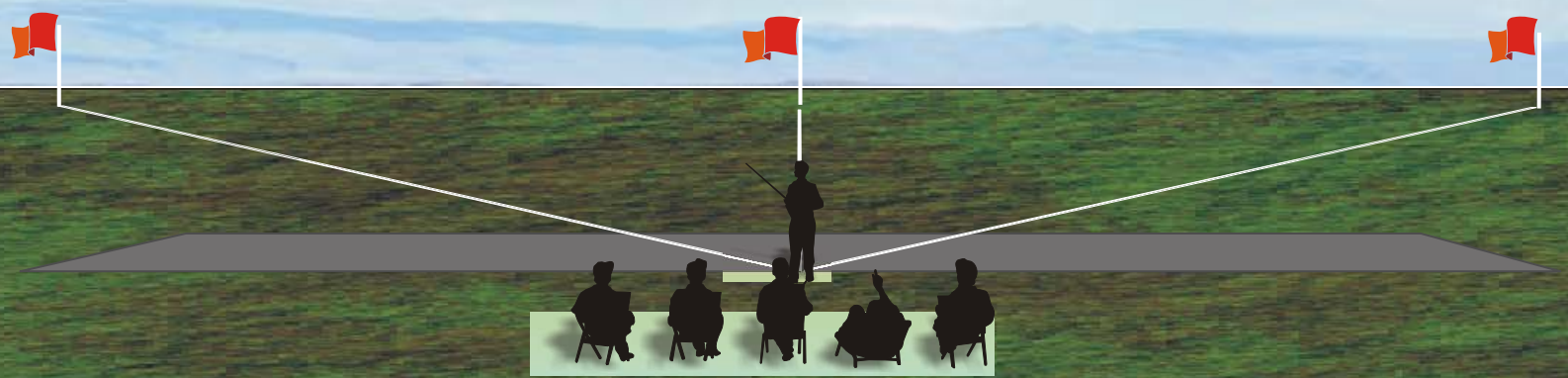
MAAC Precision Aerobatics
JUDGES TRAINING PRESENTATION

2008



SCHEMATIC MANEUVER DIAGRAMS

MASTERS

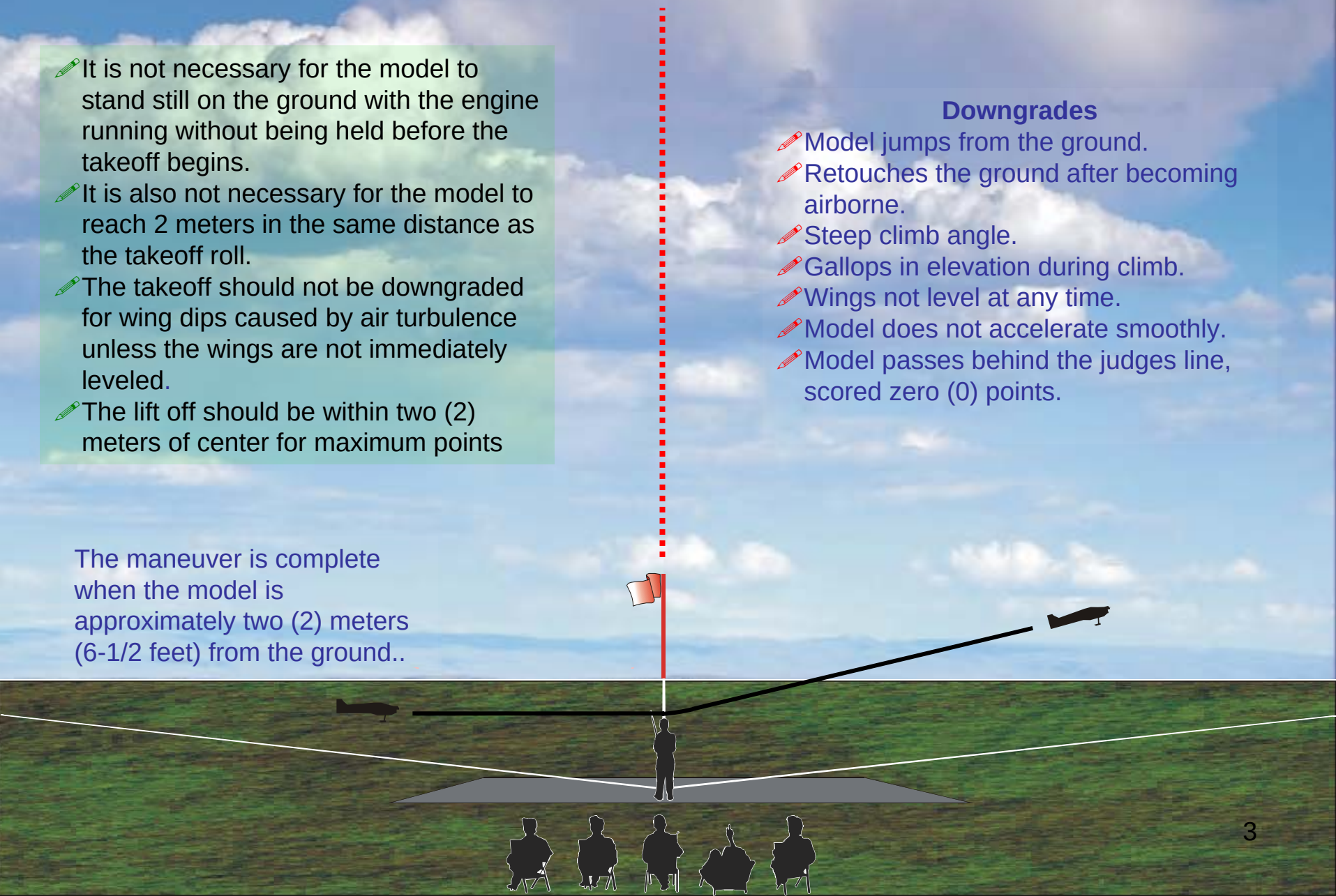
1 – Takeoff

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

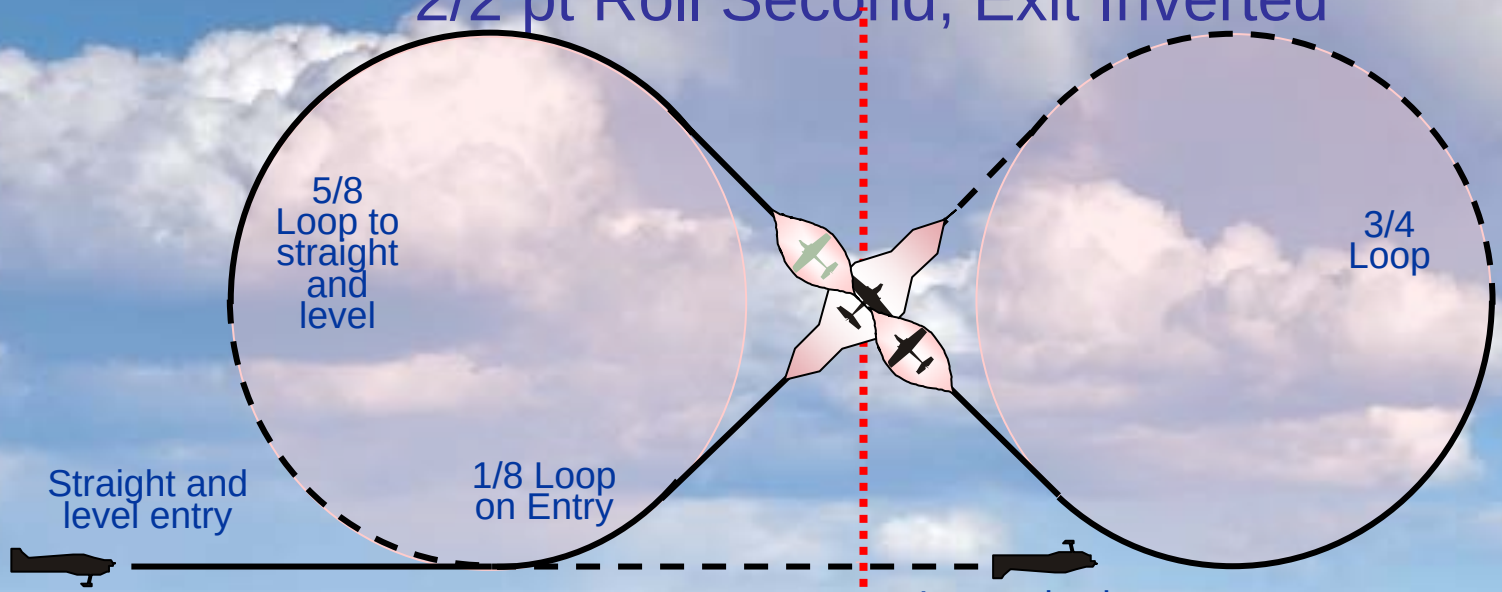
Downgrades

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



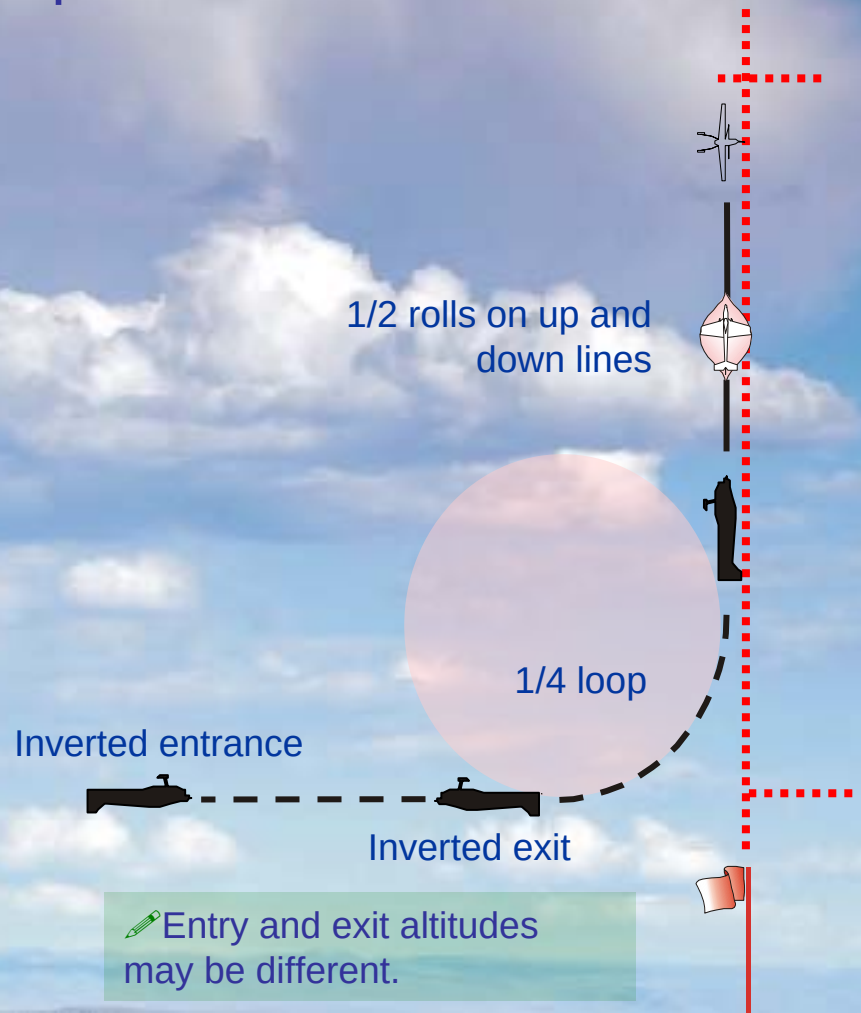
2 – Reverse Cuban 8, 4/8pt. Roll First, 2/2 pt Roll Second, Exit Inverted



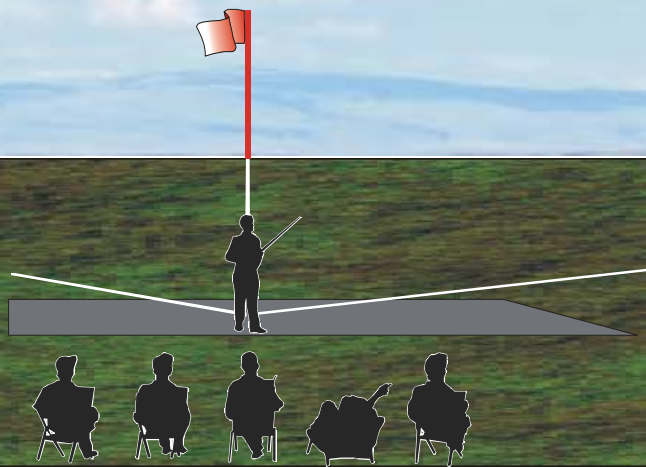
- Loops not round and same size
- Track of Model not at 45 degrees at start and finish of rolls.
- Changes in heading (track) during loops and rolls.
- Rolls not centered in the 45 degree lines and on each other.
- Entry and exit not the same altitude

3 – Stall Turn ½ Rolls Up & Down, Exit Inverted

- Model not level at start and finish.
- Track does not become exactly vertical.
- Model track not vertical at start and finish of rolls and stall turn.
- Return path not parallel to entry path. (Entry and exit altitudes may be different)
- Pivot radius greater than 1/2 wingspan.
- Pendulum movement after stall.
- Roll rates not equal
- Rolling elements not centered in their respective lines
- Loop segments not round with same size and radius.



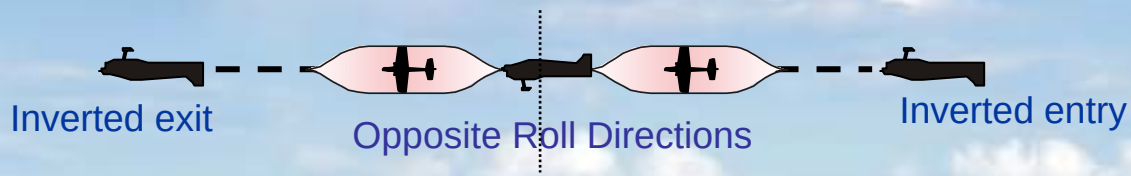
- Entry and exit altitudes may be different.



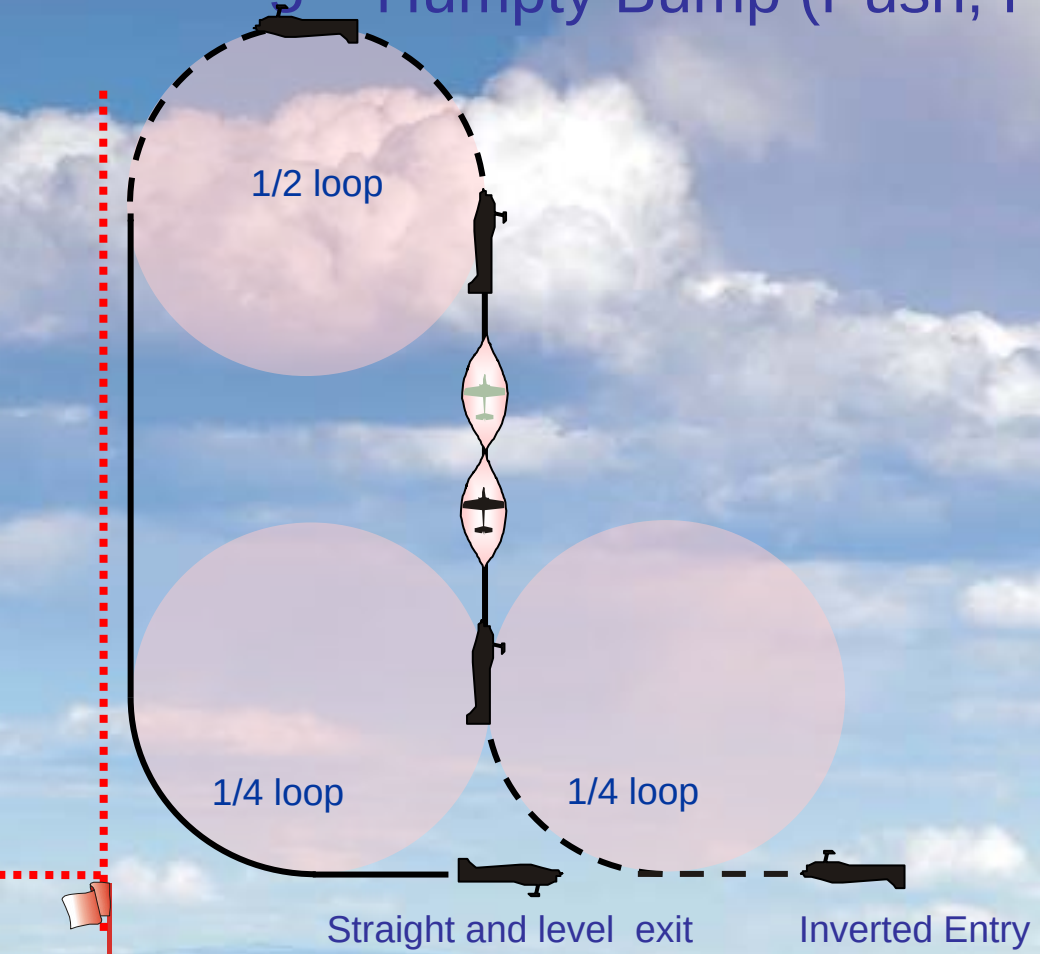
4 – Two 2/4pt Rolls Reversed Inverted to Inverted

- One-quarter rolls more or less than 90 degrees
- Model does not hesitate after each quarter roll
- Hesitations not of equal length
- Roll rate not constant
- Changes in altitude
- Changes in heading (track)

- Center is middle of upright flight



5 – Humpty Bump (Push, Pull, Pull), Full Roll Up

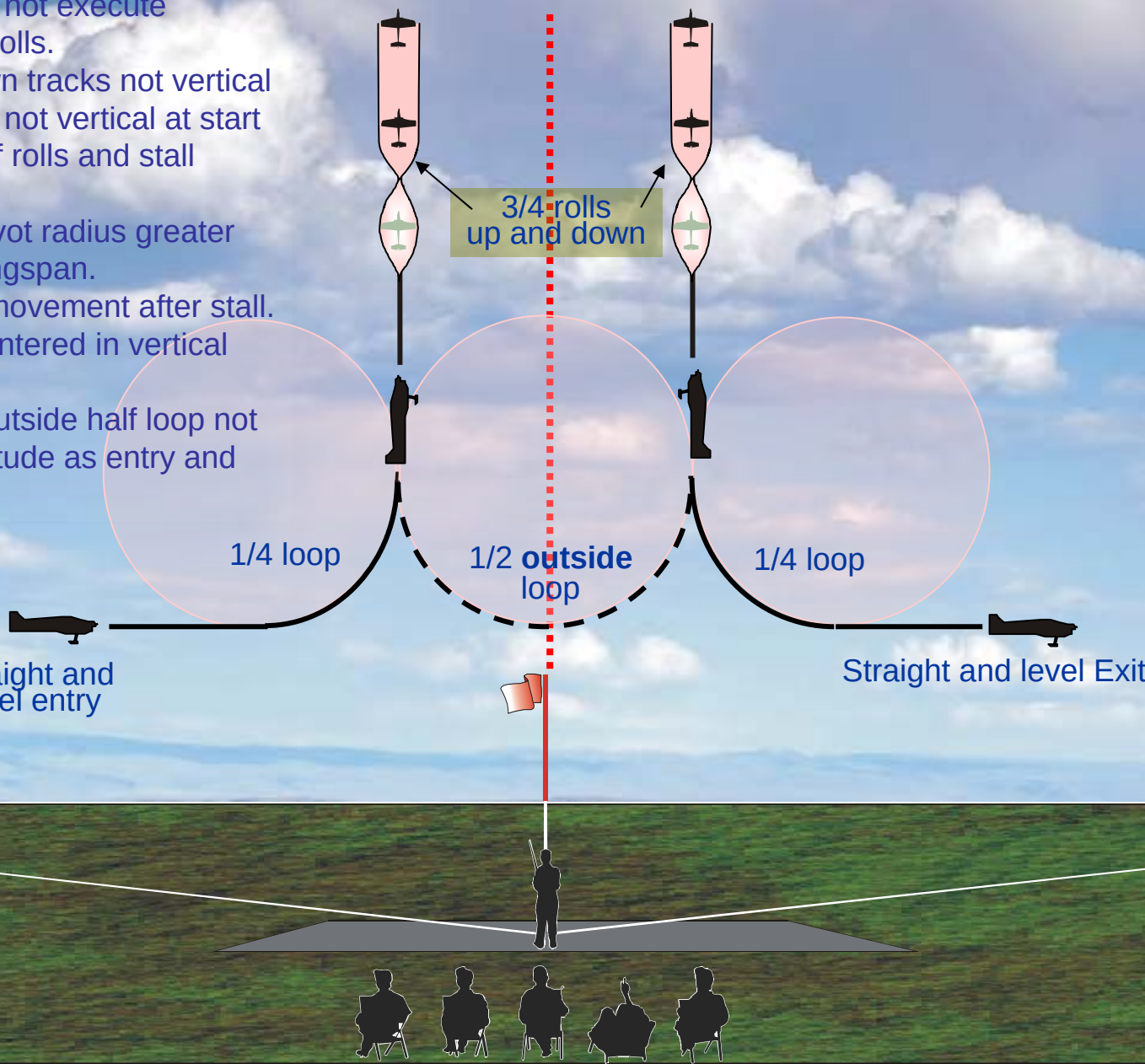


- Loop segments not round and of equal radius.
- Vertical climb and dive not vertical.
- Roll not centered in vertical up line
- Over or under rotation on prescribed roll, one point per 15-degree rule

- Entry and exit altitudes may be different.

6– Figure M with ¾ Rolls

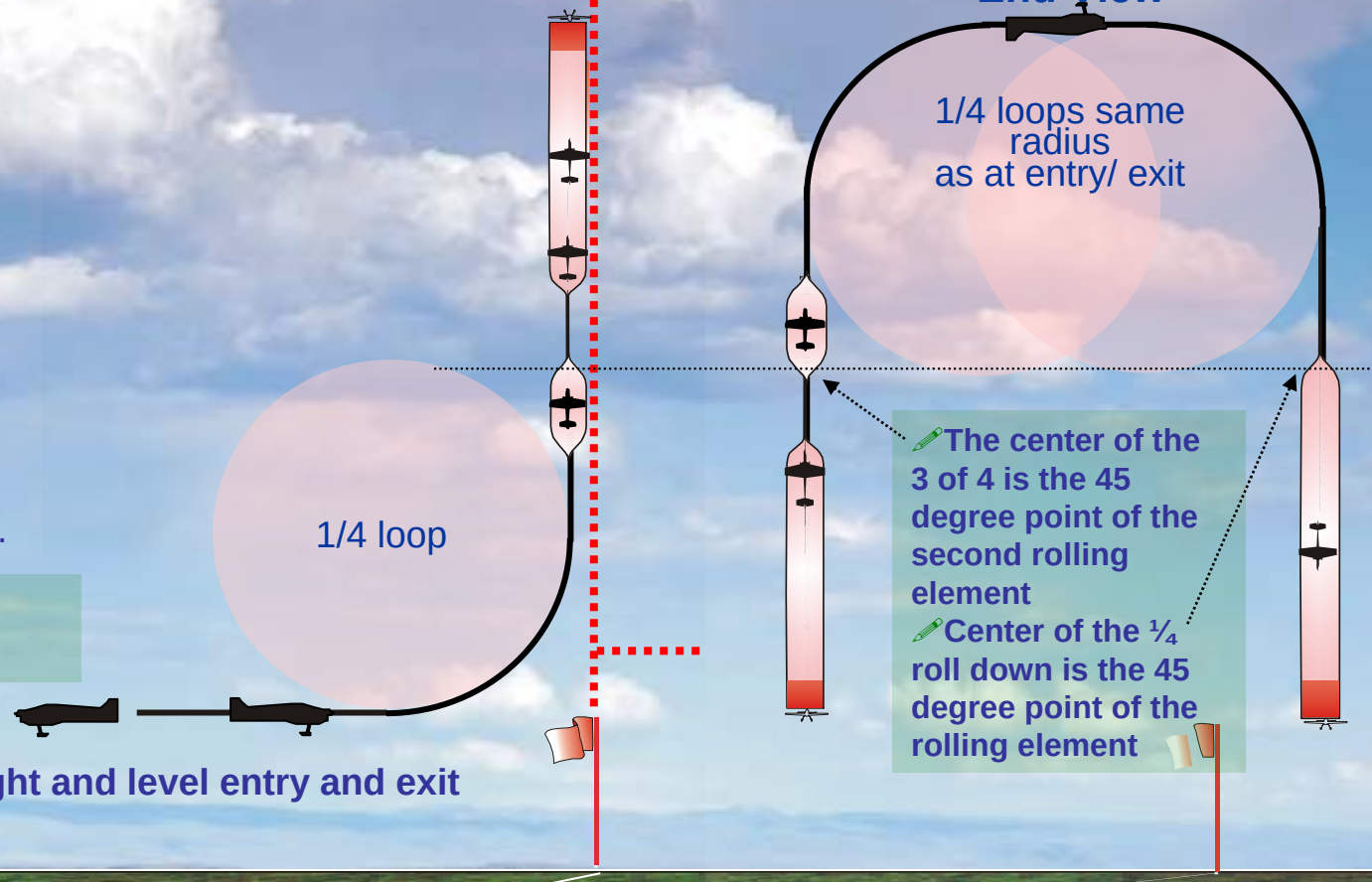
- Model does not execute prescribed rolls.
- Up and down tracks not vertical
- Model track not vertical at start and finish of rolls and stall turns.
- Stall turn pivot radius greater than 1/2 wingspan.
- Pendulum movement after stall.
- Rolls not centered in vertical lines.
- Bottom of outside half loop not at same altitude as entry and exit.



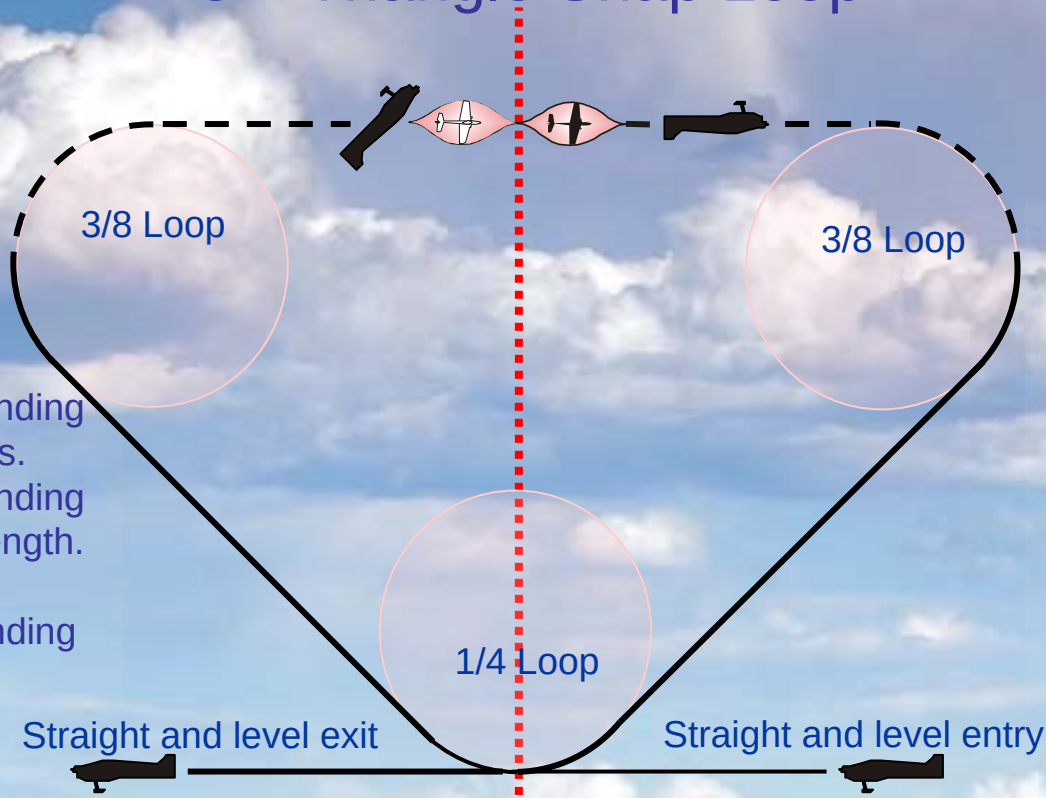
7 – Top Hat, 3 of 4 Point Roll Up / 1/4 Roll Down, Exit Upright

- Model not vertical at start and finish of rolls
- Over or under rotation on prescribed roll, one point per 15-Degree rule
- Model does not fly across top straight and level inverted and 90 degrees to the flightline.
- Rolls not centered on line segments.
- Roll rates not constant.
- Loop segments not round and of equal radius.

- Entry and exit altitudes may be different.



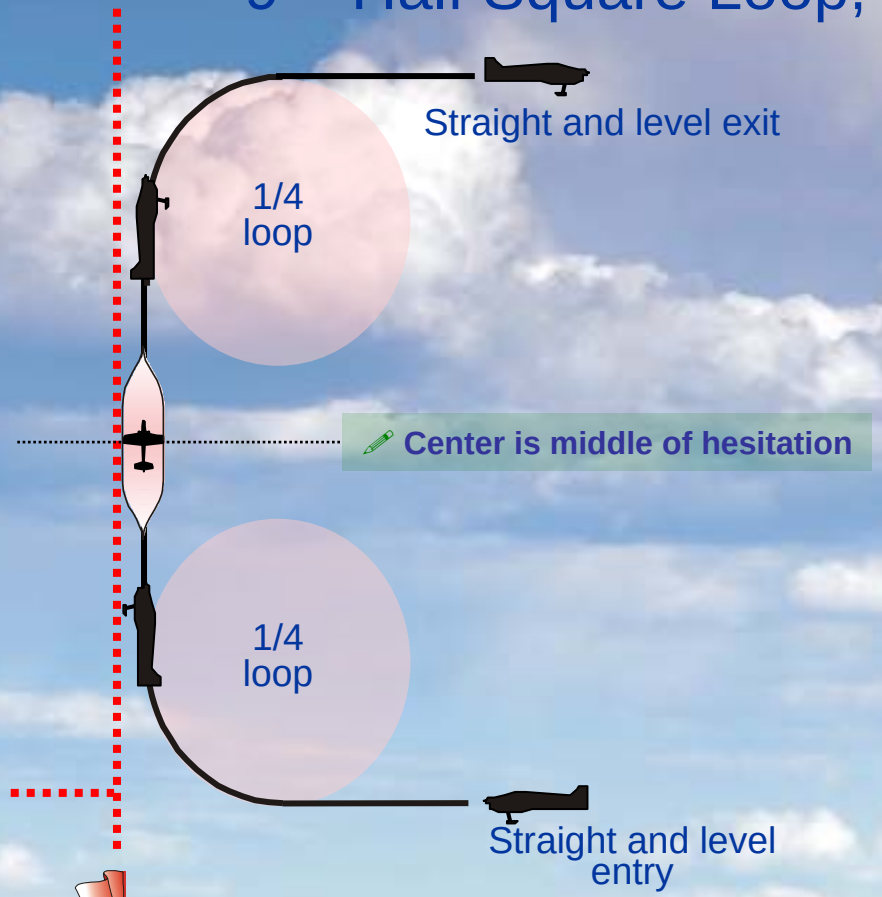
8 – Triangle Snap Loop



- Climbing and descending paths not 45 degrees.
- Climbing and descending paths not of equal length.
- Wings not level on climbing and descending paths.

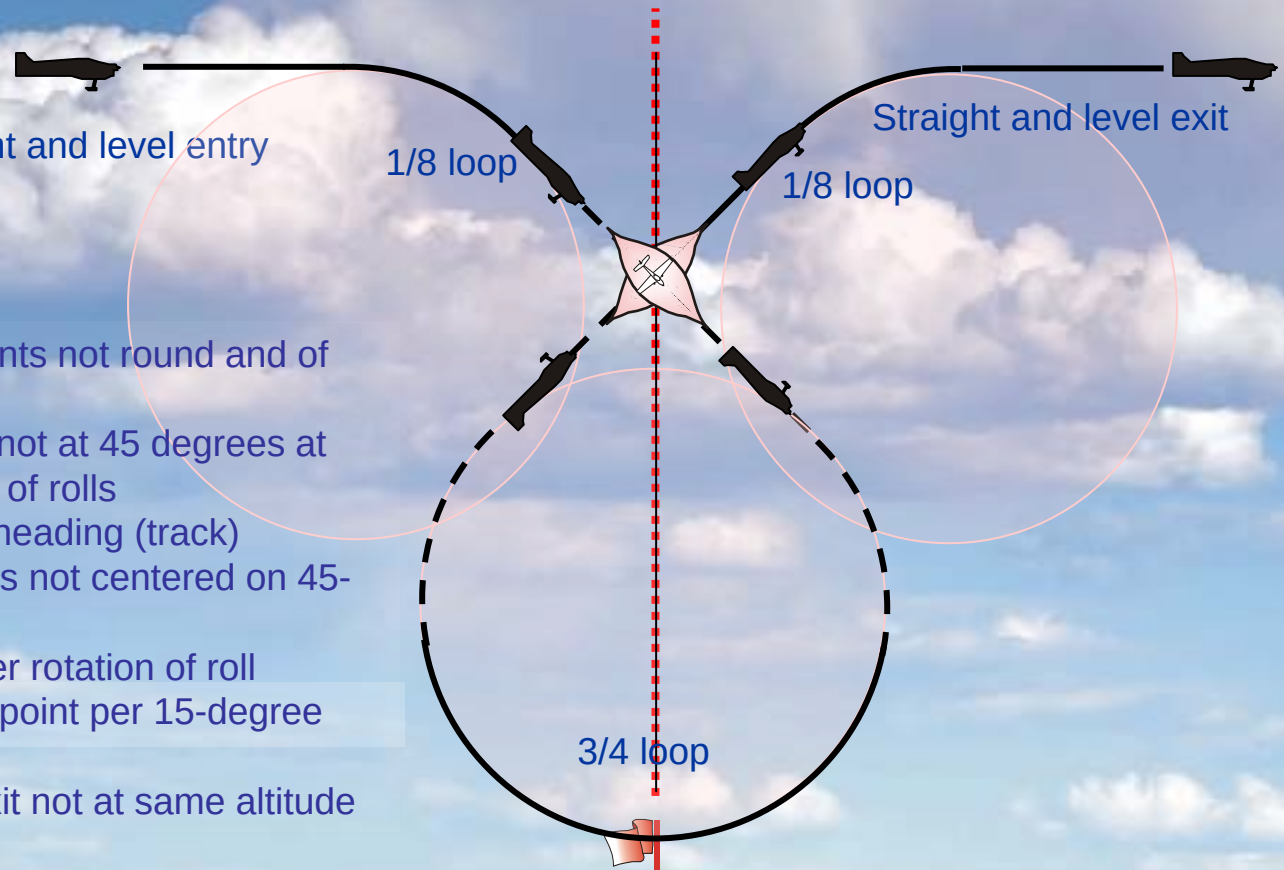
- Snap not in center of line
- Roll not snap roll, scores zero (0)
- Model changes heading (track) during loops and rolls
- Maneuver does not start and finish at same point.
- Loop segments not round and of equal radius.

9 – Half Square Loop, 2 Of 4 Pt Roll Up



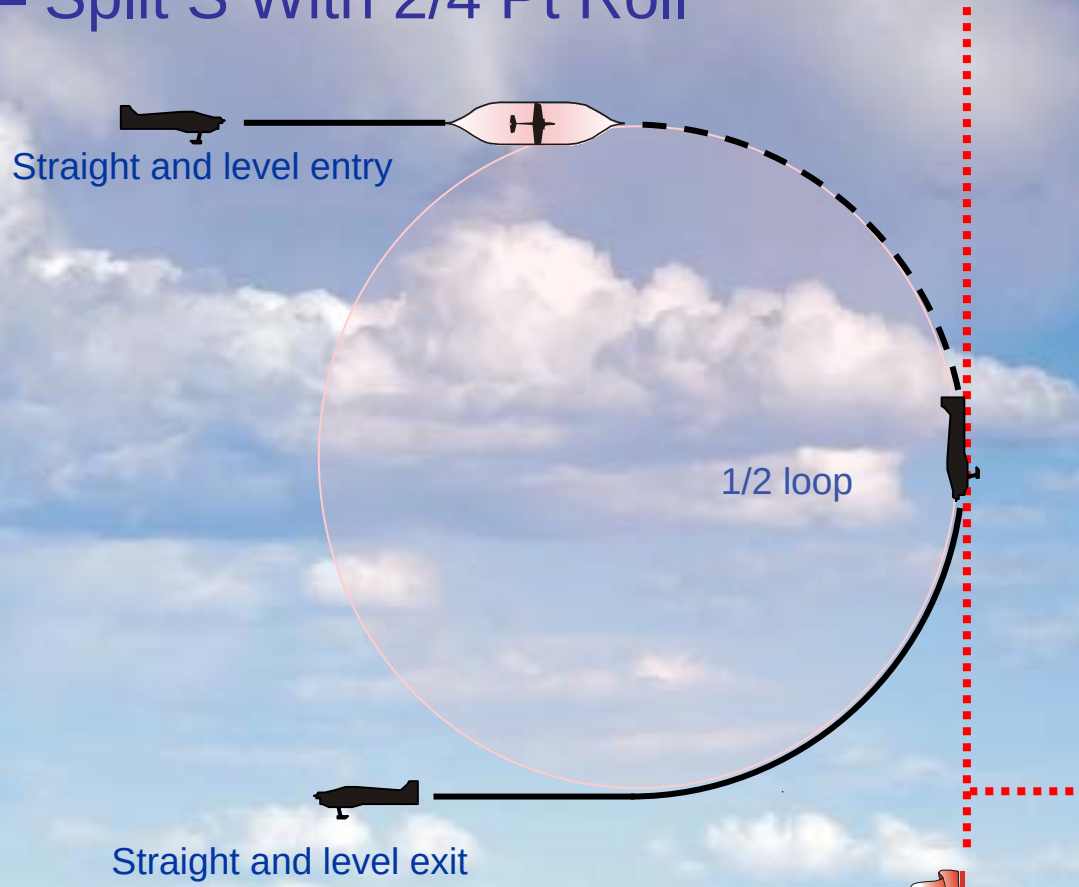
- Loop segments not of equal radius.
- Model track not vertical before and after prescribed roll.
- 2 of 4 pt roll not on middle of vertical line
- Changes in heading (track) in loop segments or during roll.
- Roll rate not constant.
- Up line track not vertical.

10 – Reverse Golf Ball From Top With ½ Rolls



- Loop segments not round and of equal radius
- Model track not at 45 degrees at start and finish of rolls
- Changes in heading (track)
- Roll elements not centered on 45-degree lines
- Under or over rotation of roll elements, one point per 15-degree rule
- Entry and exit not at same altitude

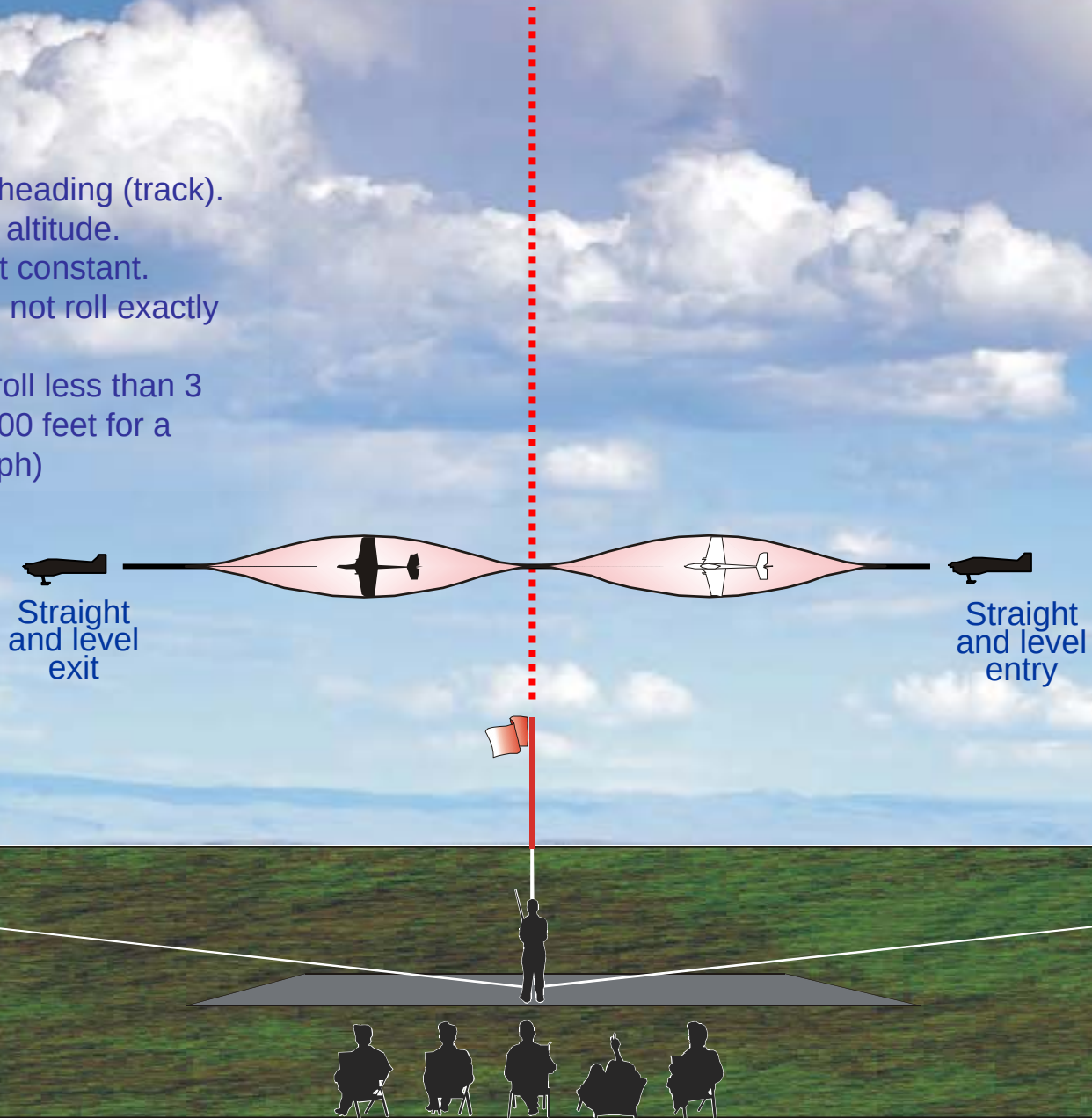
11 – Split S With 2/4 Pt Roll



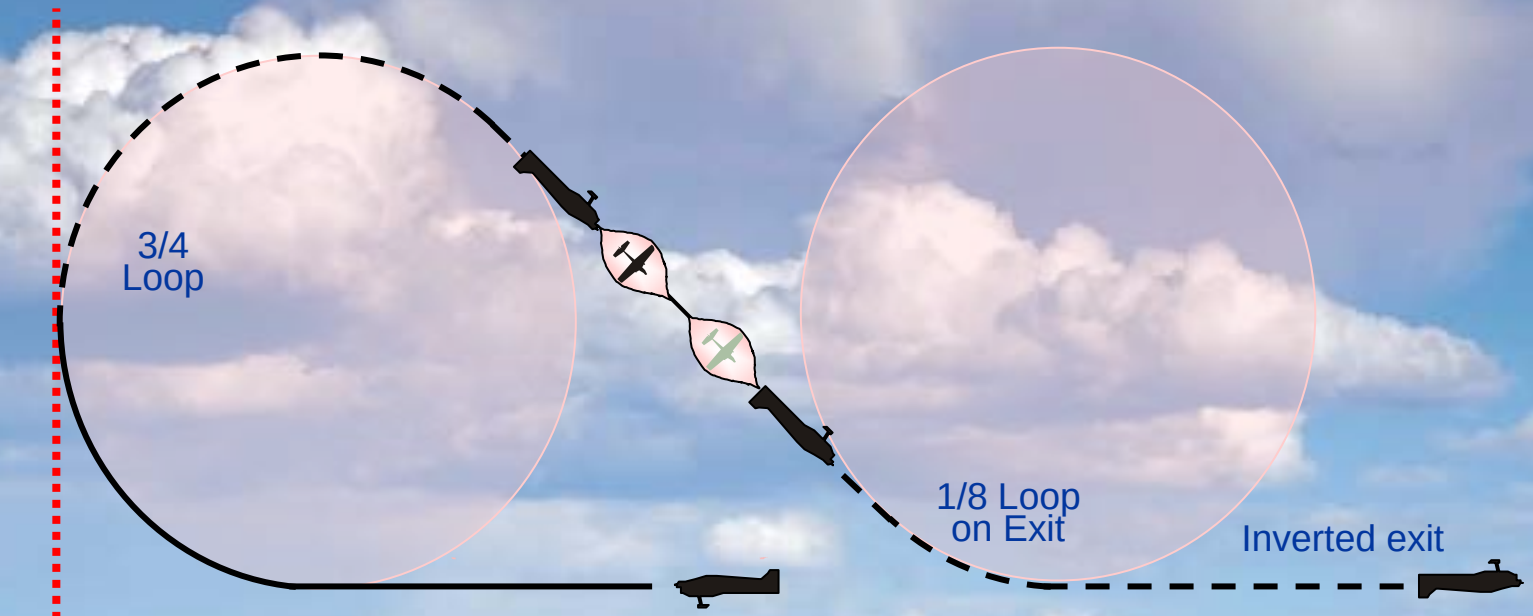
- Quarter rolls more or less than 90 degrees
- 2 of 4 pt roll not in level flight.
- Half loop not started immediately after 2/4 Pt roll.
- Half loop not constant radius.
- Changes in heading (track).
- Model heading (track) does not finish exactly opposite the direction of entry.

12 – Slow Roll

- Changes in heading (track).
- Changes in altitude.
- Roll rate not constant.
- Model does not roll exactly 360 degrees.
- Duration of roll less than 3 seconds (+/- 300 feet for a model at 65 mph)



13 – Half Cuban 8 with 2/2 pt down, Exit Inverted

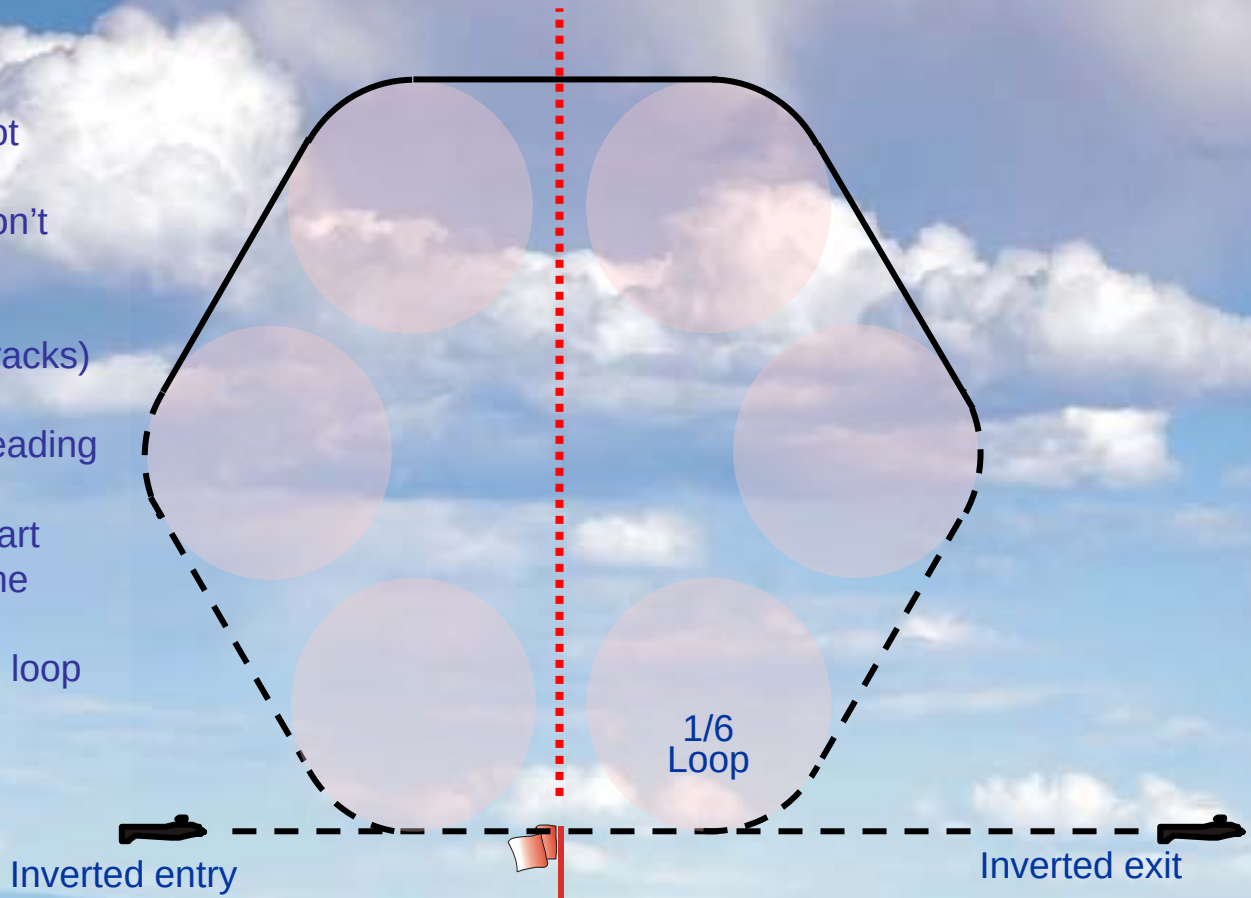


- Entry and exit altitudes may be different.

- Loop segments not round and of same radius.
- Model not at 45 degrees before and after 2 of 2 point roll.
- Changes in heading (track) during 2 of 2 pt roll.
- 2 of 2 pt roll not on center of 45-degree line.

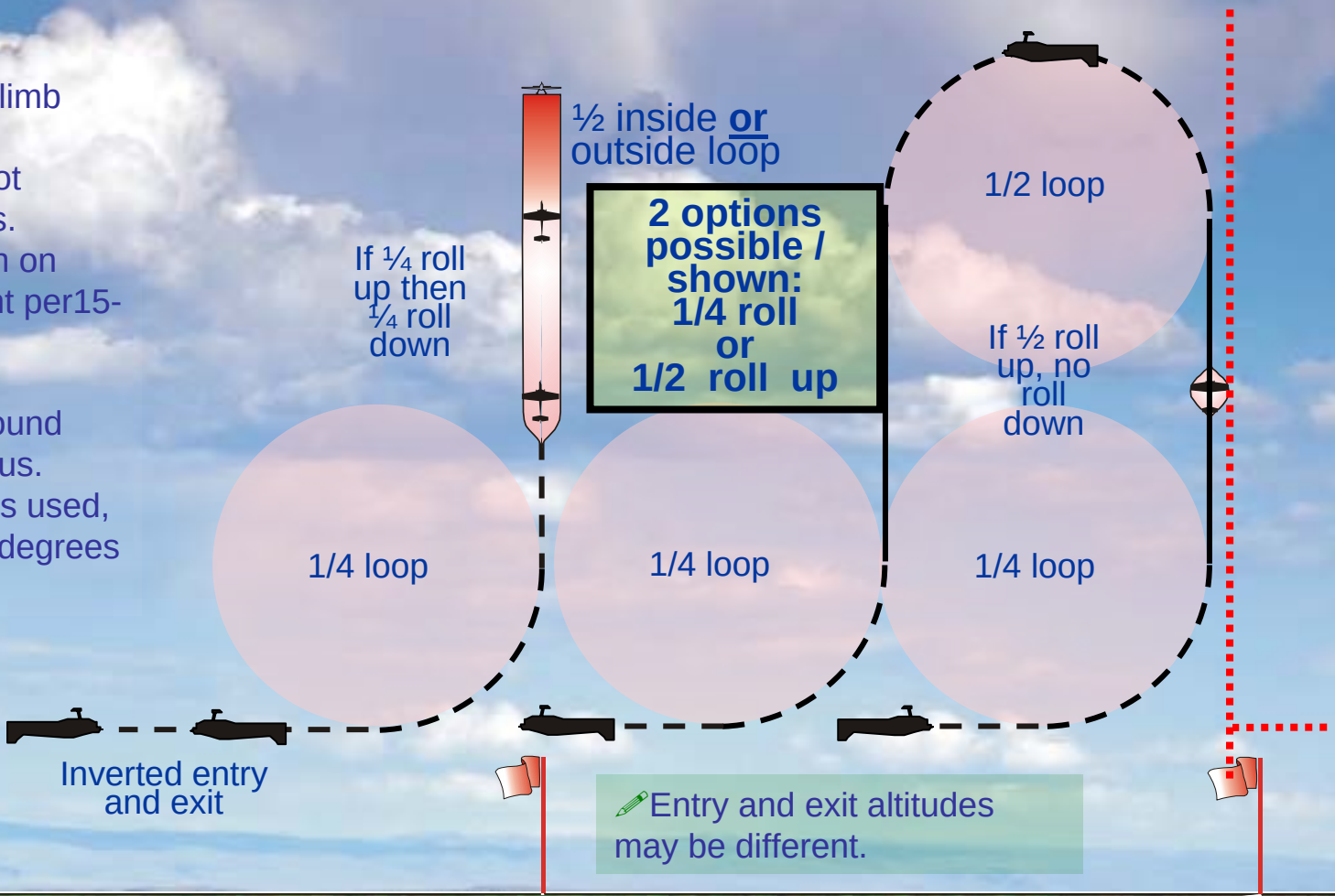
14 – Six Sided Outside Loop, Exit Inverted

- Wings not level
- Loop segments not round
- Loop segments don't have same radius
- Climbing and descending paths (tracks) not 60 degrees
- Model changes heading (track)
- Model does not start and finish at the same point
- All six sides of the loop not same length.
- Entry and exit at different heights

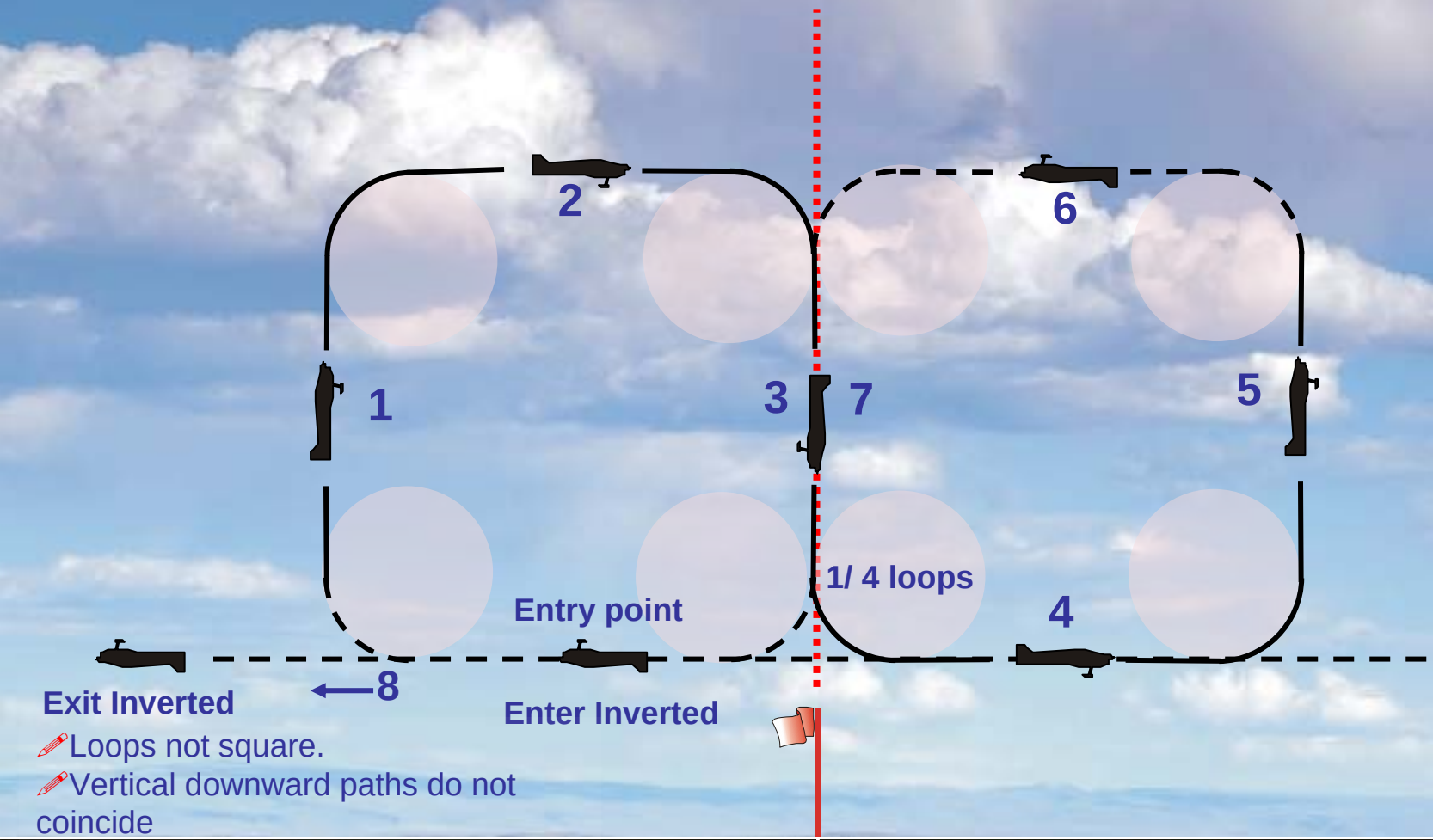


15 – Humpty Bump With Options, Exit Inverted

- Track not vertical in climb and dive.
- Rolls (as specified) not centered in vertical lines.
- Over or under rotation on prescribed roll, one point per15-Degree rule.
- Half loop not round.
- Loop segments not round with same size and radius.
- If optional 1/4 roll up is used, track of 1/2 loop not 90 degrees to the flightline.

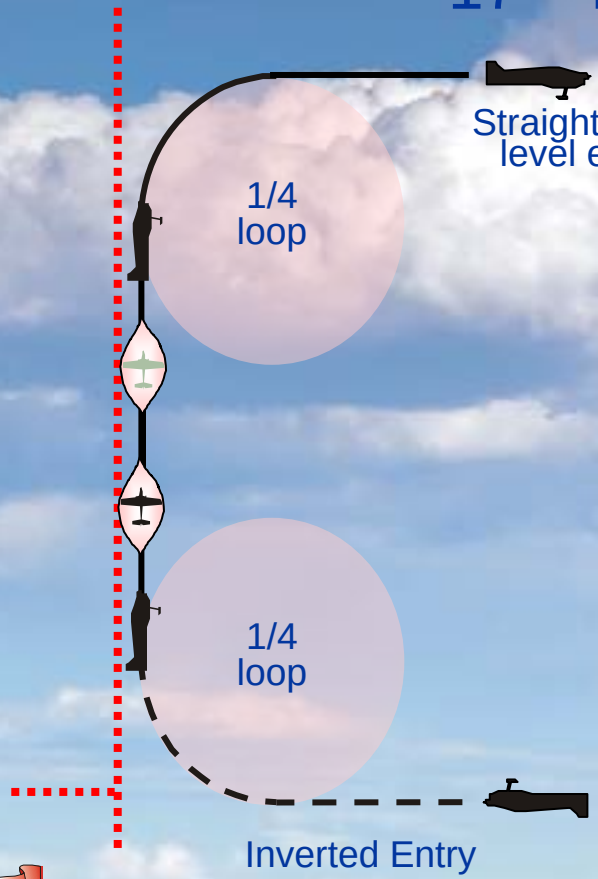


16 – Square Horizontal Eight, Exit Inverted



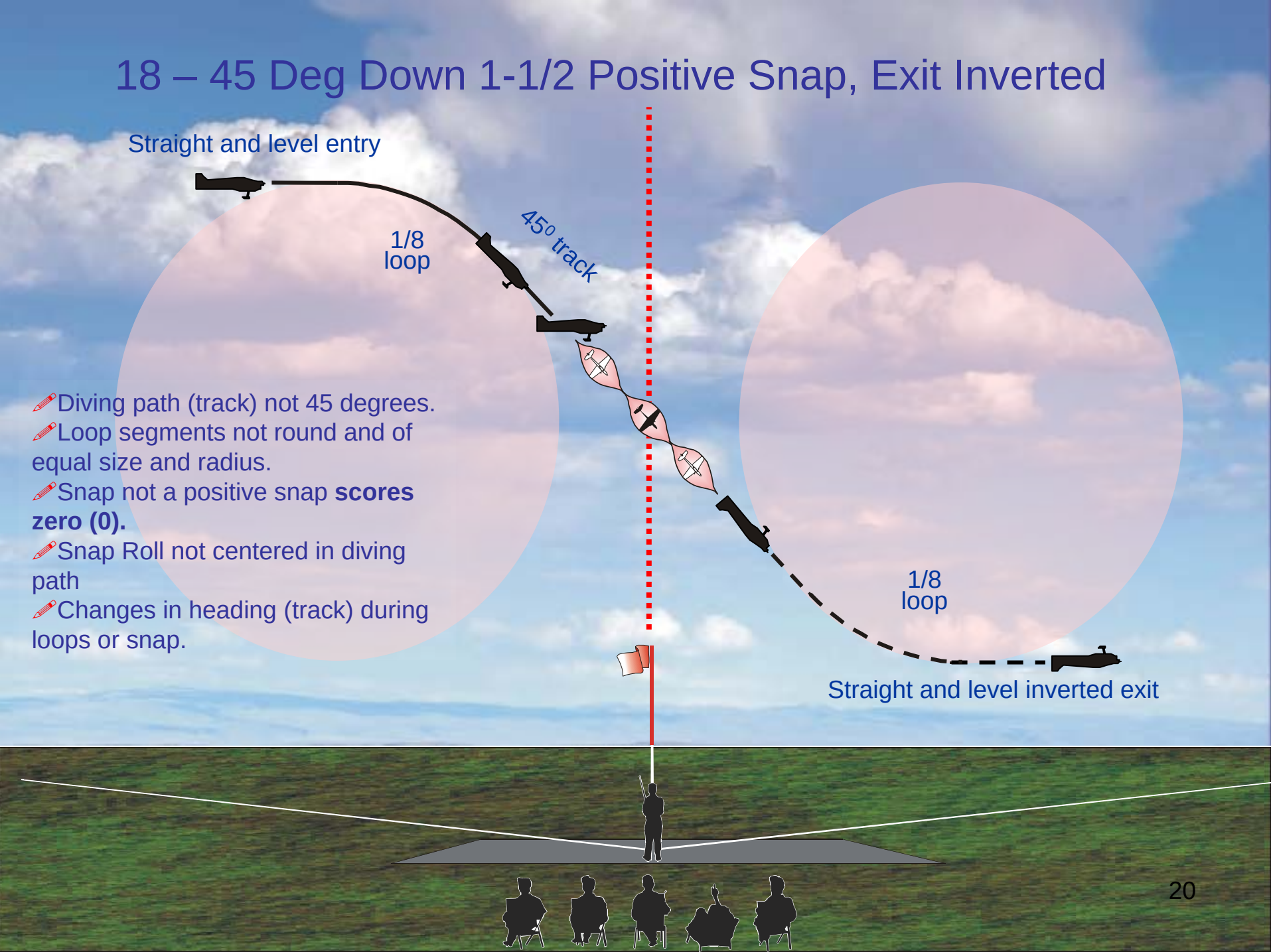
- Loops not square.
- Vertical downward paths do not coincide
- Loops not same size
- Changes in heading (track)
- Wings not level
- Sides of squares not same size
- Corner loops not of equal radius

17 – Half square loop, 2/2 pt roll up



- Corner loop segments not of equal radius.
- Model not vertical before and after prescribed roll.
- Model does not execute 2 point roll. **(0 points)**
- Point roll not on middle of vertical line
- Changes in heading (track) in loop segments or during roll.
- Roll rate not constant.
- Up line track not vertical.

18 – 45 Deg Down 1-1/2 Positive Snap, Exit Inverted

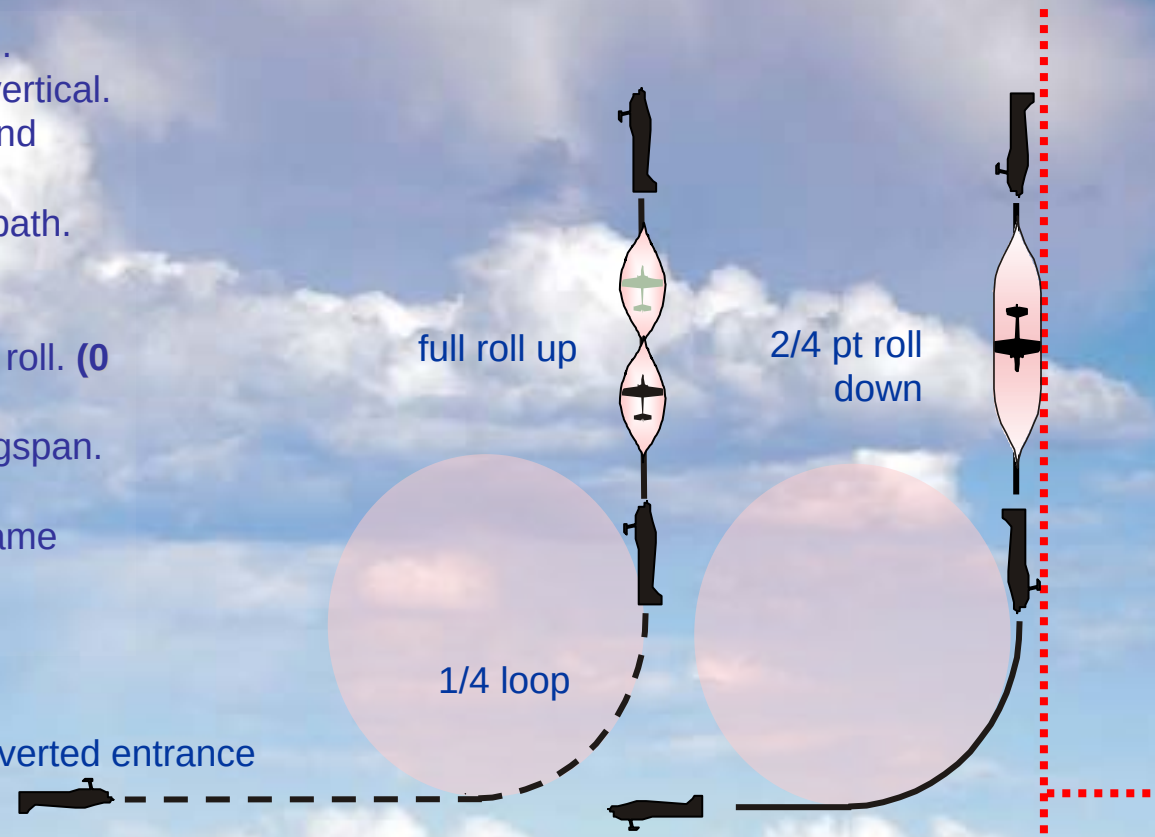


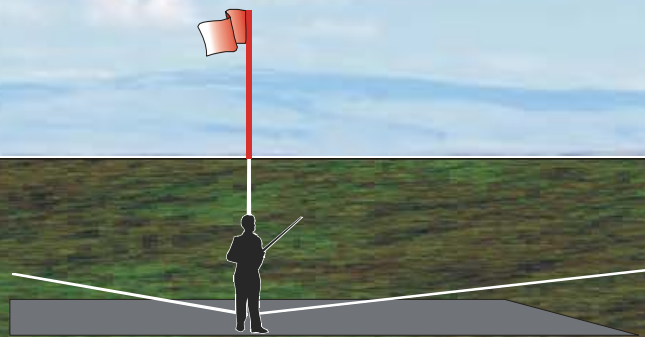
- Diving path (track) not 45 degrees.
- Loop segments not round and of equal size and radius.
- Snap not a positive snap **scores zero (0).**
- Snap Roll not centered in diving path
- Changes in heading (track) during loops or snap.

19 – Stall Turn, Full roll up, 2 of 4 Point Down

- Model not level at start and finish.
- Track does not become exactly vertical.
- Model track not vertical at start and finish of rolls and stall turn.
- Return path not parallel to entry path. (Entry and exit altitudes may be different)
- Model does not execute 2/4point roll. **(0 points)**
- Pivot radius greater than 1/2 wingspan.
- Pendulum movement after stall.
- Loop segments not round with same size / radius.
- Roll rates not equal

- Entry and exit altitudes may be different.



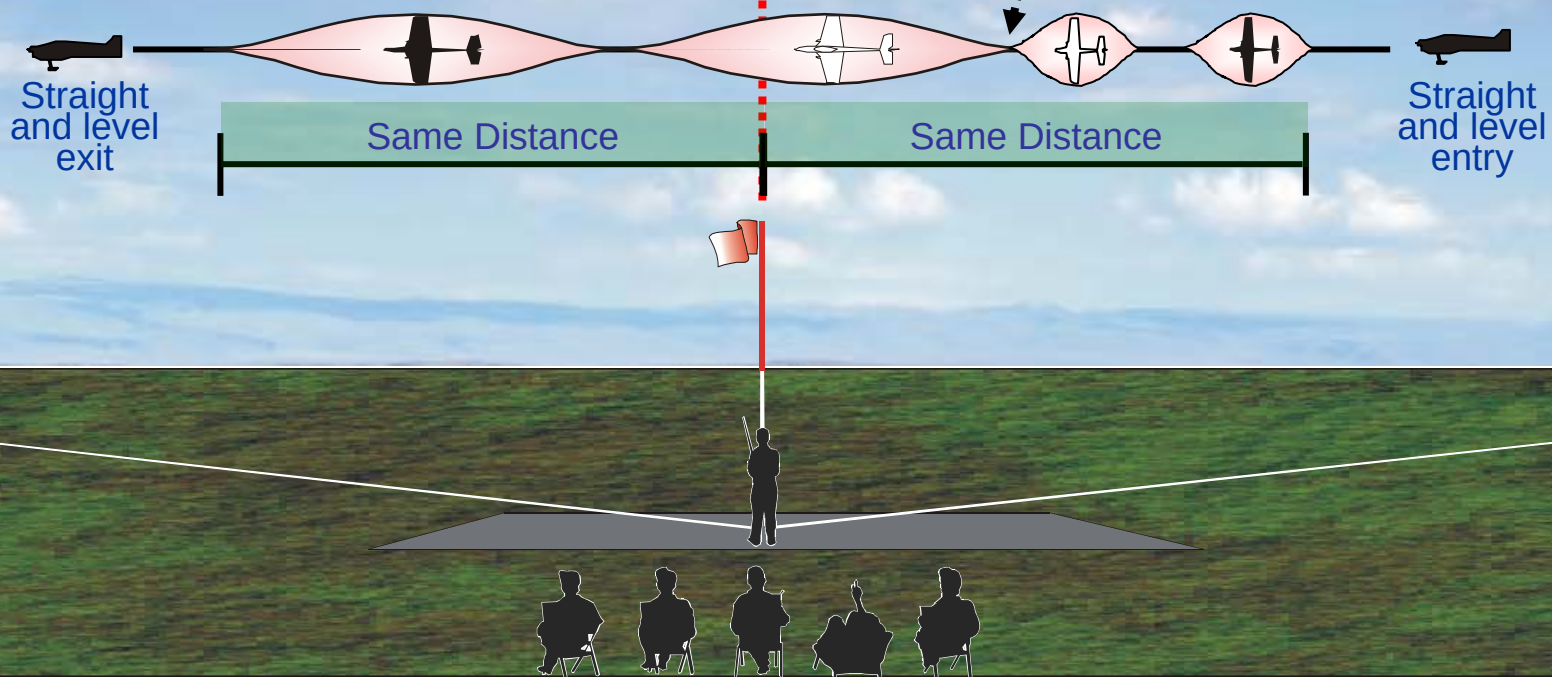


20 – 2 of 2 Point Roll, Slow Roll Reversed

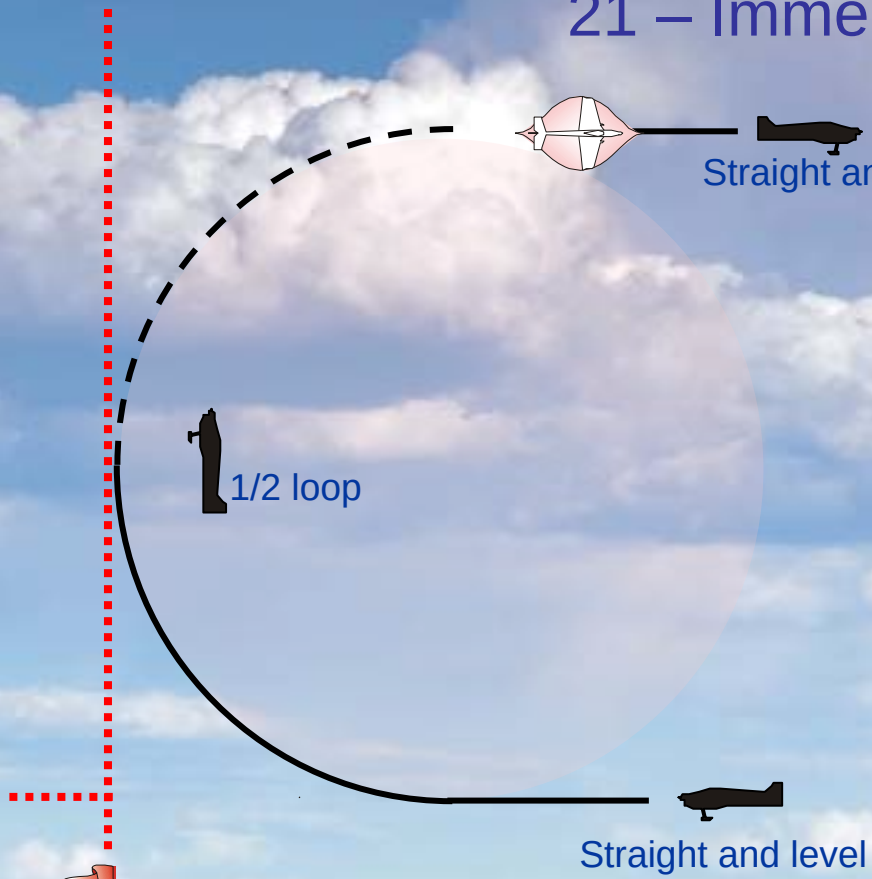
- One-half rolls more or less than 180 degrees.
- Model does not hesitate after first half roll.
- 2/2 pt roll and slow roll not opposite directions **(0 pts)**
- 2/2 pt Roll rate not constant.
- Slow roll rate not constant.
- Changes in heading (track).
- Changes in altitude.

Notes

- 2/2 roll rate does not need to match the slow roll rate.
- Center is determined by the length of the entire maneuver, not by a particular part of the maneuver
- The slow roll starts immediately after the second half roll ends. There is **no** hesitation after the second half roll."



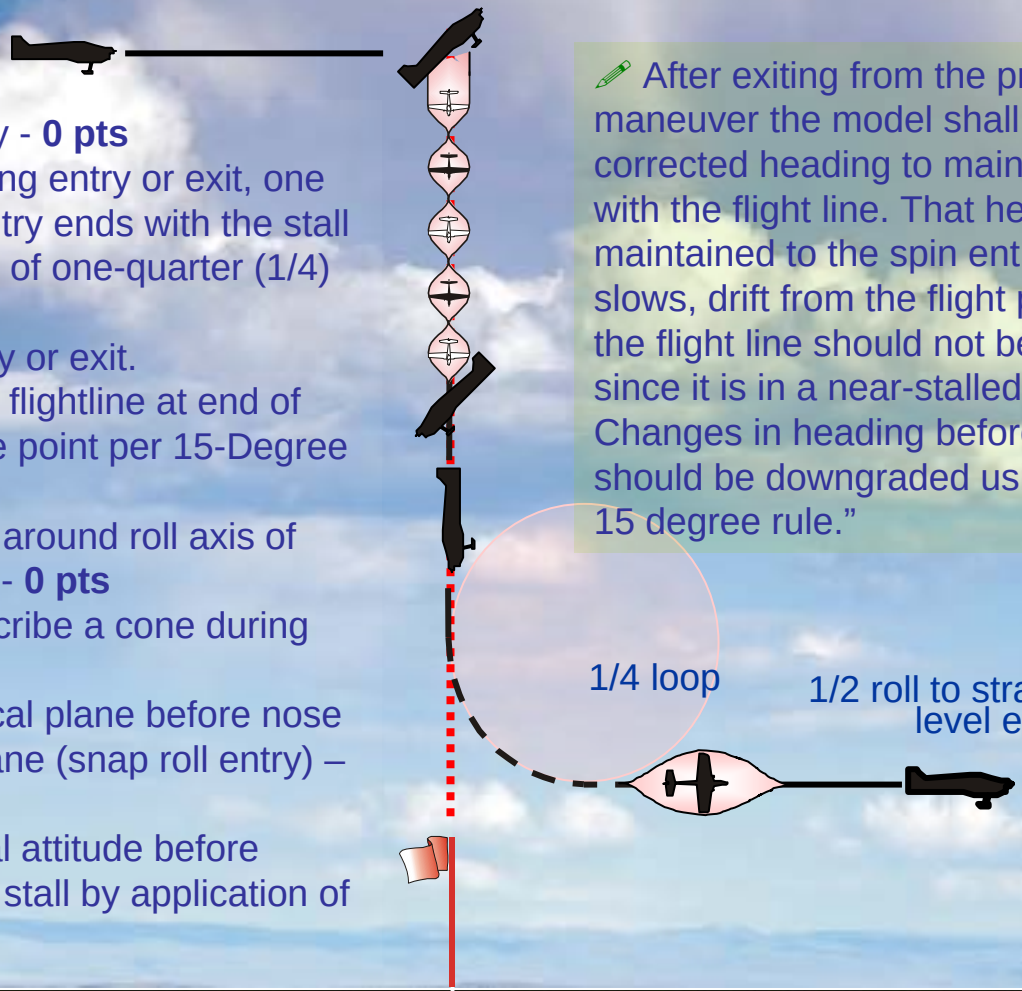
21 – Immelman Turn



- 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.

22 – 2-1/2 -Turn Spin With Half Roll Exit

Straight and level entry



- Snap roll or unstalled entry - **0 pts**
- Model climbs or dives during entry or exit, one point per 15-Degree Rule. Entry ends with the stall and exit begins at completion of one-quarter (1/4) loop recovery to level flight.
- Wings not level during entry or exit.
- Wings not perpendicular to flightline at end of required number of turns, one point per 15-Degree Rule.
- Spiral dive or pure rotation around roll axis of more than one-half (1/2) turn - **0 pts**
- Tail of model does not describe a cone during rotation - **0 pts**
- Wing passes through vertical plane before nose passes through horizontal plane (snap roll entry) – **0 pts**
- Fuselage reaches a vertical attitude before rotation begins (simulation of stall by application of elevator) - **0 pts**

- After exiting from the preceding maneuver the model shall establish a wind corrected heading to maintain track parallel with the flight line. That heading should be maintained to the spin entry. As the model slows, drift from the flight path parallel with the flight line should not be downgraded since it is in a near-stalled condition. Changes in heading before spin entry should be downgraded using the 1 point per 15 degree rule."

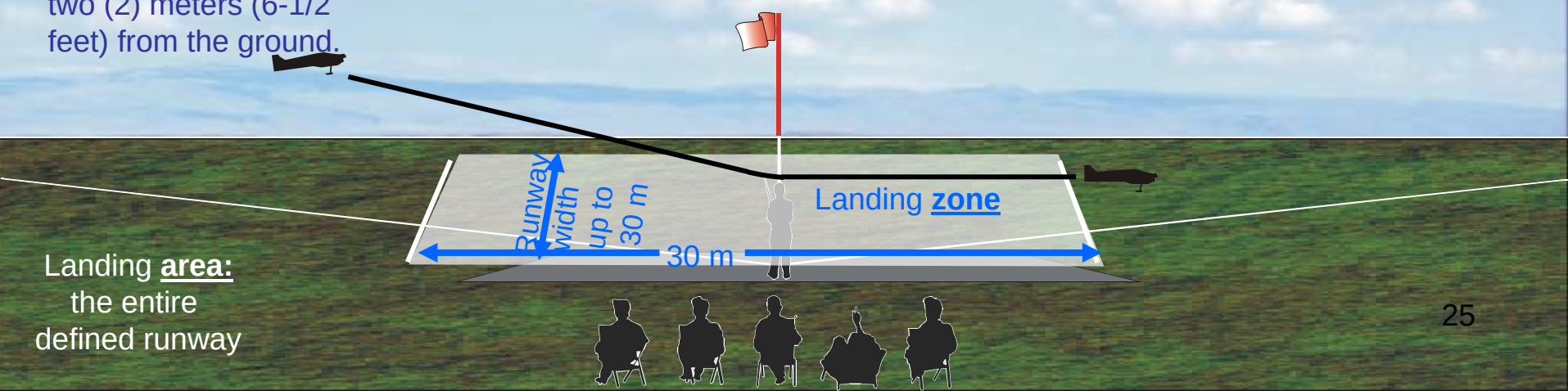
23 – Landing

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
- Landing **<u>zone</u>** is 30 m long centered on the judges BUT not more than 30 M wide.

- 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>area:</u>** the entire defined runway