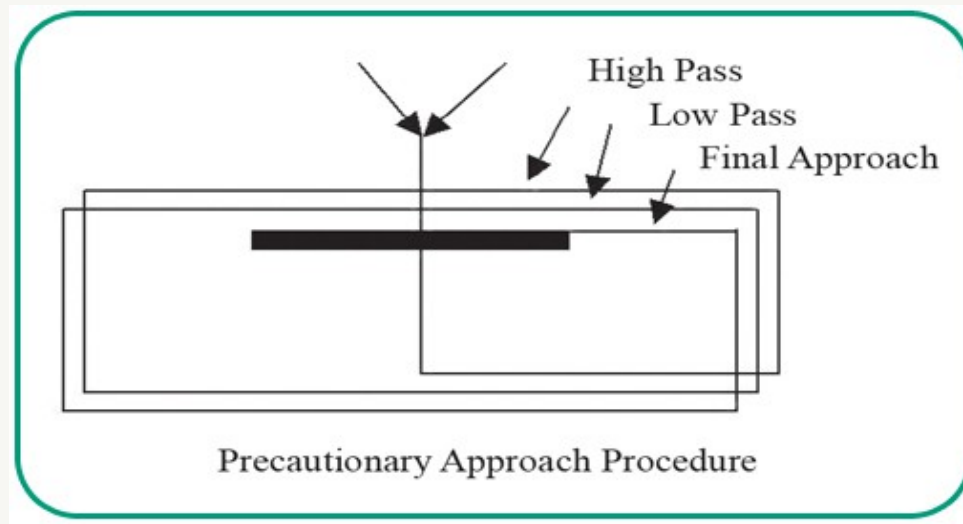


Ex. 21 – Precautionary Landing



What you will learn:

- ✓ How to inspect an unfamiliar and/or unprepared site for the suitability of the landing surface
- ✓ How to set an approach and carry out a successful landing at the site.



Why learn this:



Landing when there is any doubt about the suitability of the landing surface, not familiar, no ATIS information

Off-aerodrome landing due to low fuel, bad weather.

Links:

- ✓ You have already carried out normal, short-field and soft-field approaches and landings
- ✓ You are familiar with illusions created by drift and how to counteract them
- ✓ You are able to maintain straight-and-level flight at a variety of power/airspeed settings.

Theories and Definitions:

✓ Selecting and Evaluating Landing Site

- Wind Speed and Direction
- Landing Surface, Length, Obstacles

✓ Inspection Passes

- High Pass and Low Pass - how tall is that grass?



Selecting and Evaluating Landing Site

Wind Speed and Direction

- ✓ Visual indication of wind direction & speed
 - Smoke
 - Water, crops or tall grass ripples
 - Trees (some types of trees have light-coloured underside exposed on upwind side)
- ✓ If no visual indication available, recall area forecasts and observe ground speed and in-flight drift.

Selecting and Evaluating Landing Surface

✓ looking for a surface that is:

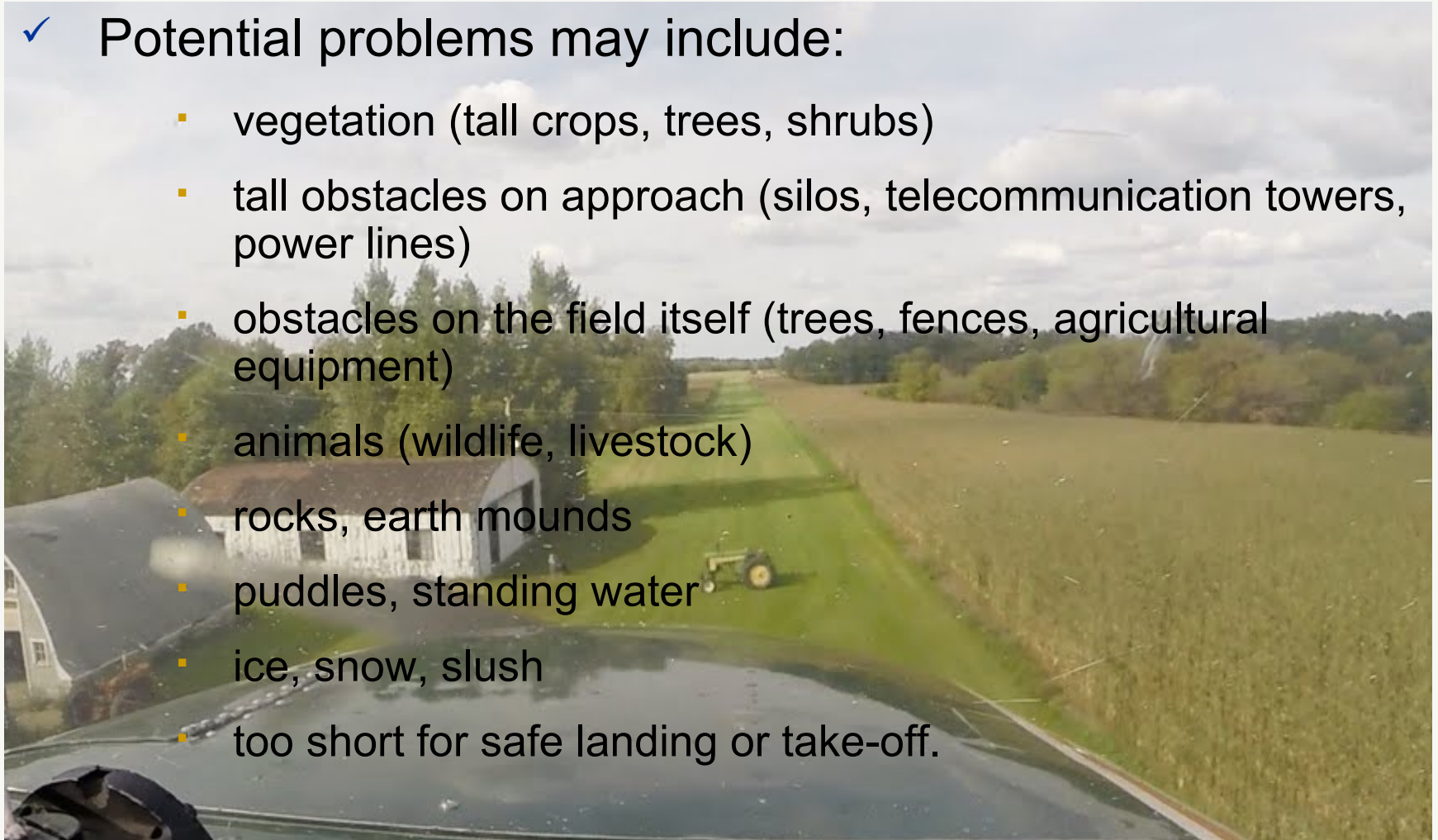
- into wind
- sufficiently long
- smooth and firm
- level
- free of obstacles
- next to civilization (transportation, communication)

Looks like a great place for a grass runway!

Selecting and Evaluating Landing Site

Landing Surface

- ✓ Potential problems may include:
 - vegetation (tall crops, trees, shrubs)
 - tall obstacles on approach (silos, telecommunication towers, power lines)
 - obstacles on the field itself (trees, fences, agricultural equipment)
 - animals (wildlife, livestock)
 - rocks, earth mounds
 - puddles, standing water
 - ice, snow, slush
 - too short for safe landing or take-off.



Landing Surface



Selecting and Evaluating Landing Site

Length of Landing Site

- ✓ To estimate length, you can:
 - use geographical features: in many areas, rural roads are on a regular grid
 - visually compare the site with runways you have had experience with (beware of illusions!)
 - fly from one end of the field to the other, timing your flight (at 60 kts, 1 second of flight = 100 feet; remember to account for wind)
- ✓ Use as many ways as you have time to cross-check your estimate.

Selecting and Evaluating Landing Site

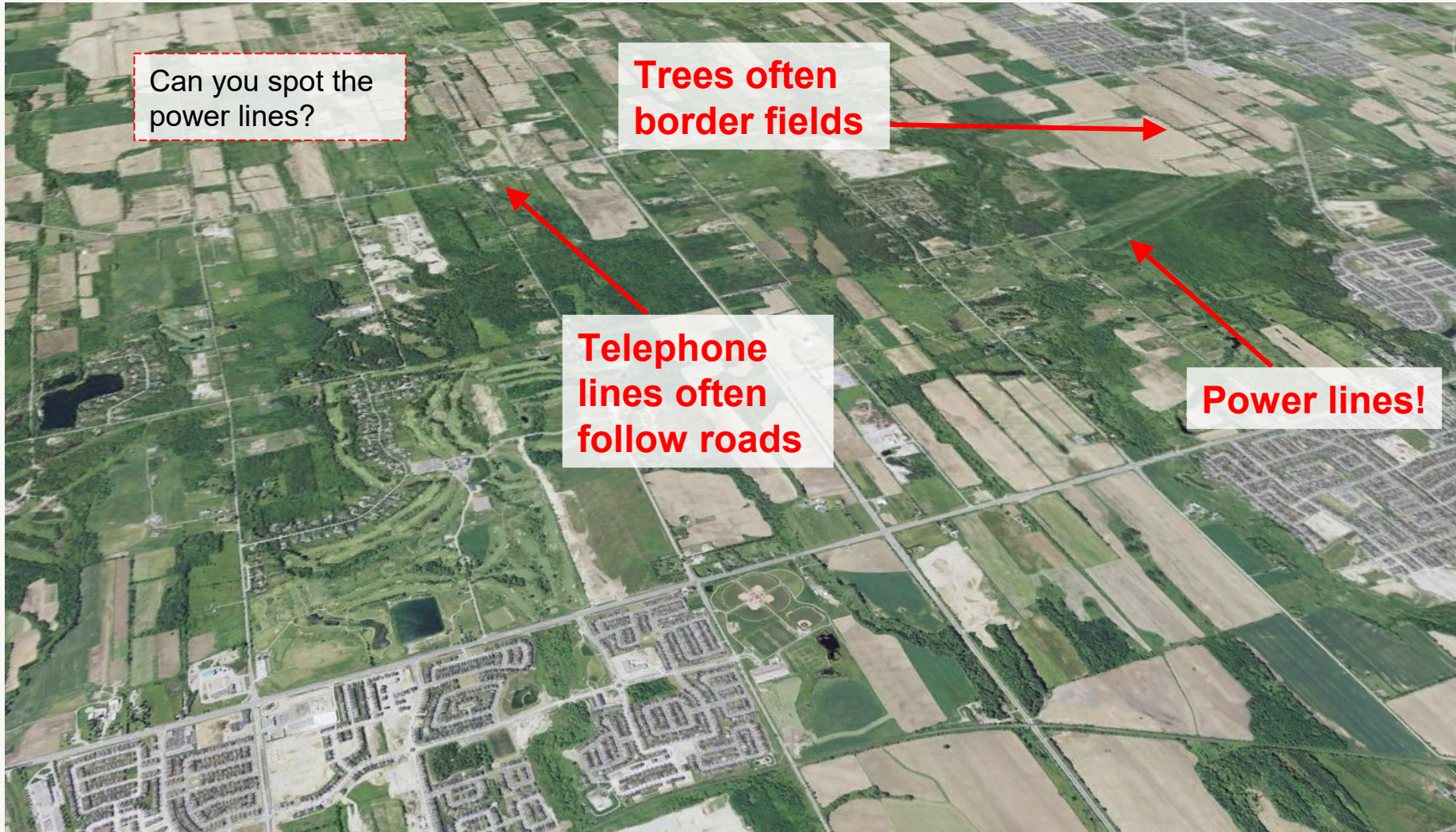
Obstacles:

Many obstacles are not visible against the ground, and only become apparent against the sky (once you have descended)

Be on alert for unexpected obstacles, try to predict where you are likely to encounter obstacles.



Obstacles



Inspection Passes: High Pass

Done at ~1000 feet AGL

Done to rule out obvious reasons not to land on the site:

obstacles on approach path

insufficient length

poor (remote) location

obvious irregularities of landing surface (tall vegetation, hilly).

Inspection Passes: Low Pass

- ✓ Done as low as possible

- ✓ Done to find good reasons to land at the site
 - good landing surface
 - no low-level obstructions
 - into the wind (no sideways drift).

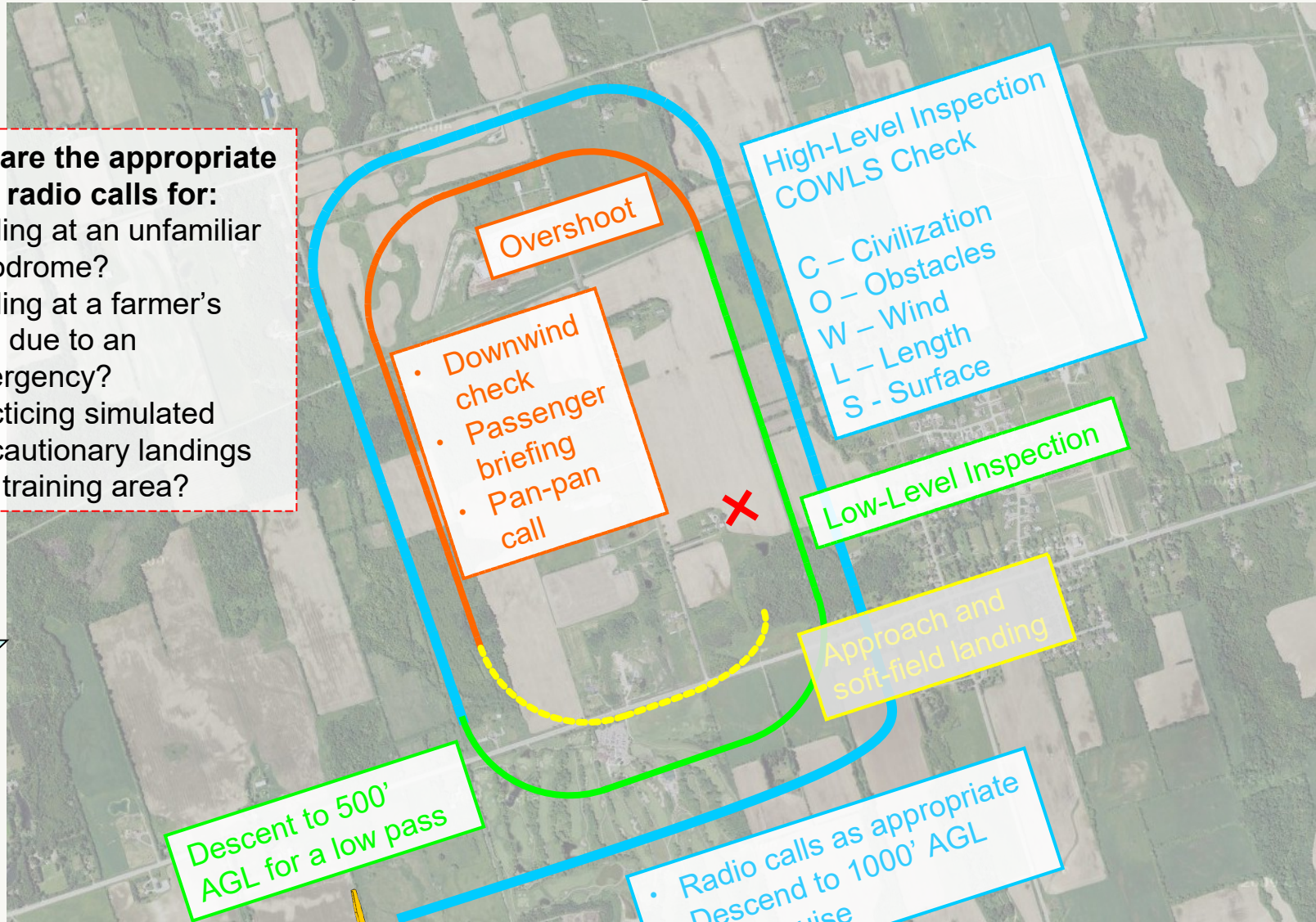
Procedures

- ✓ Precautionary Landing
 - High Pass
 - Low Pass
 - Approach and Landing.

Precautionary Landing

What are the appropriate radio calls for:

- landing at an unfamiliar aerodrome?
- landing at a farmer's field due to an emergency?
- practicing simulated precautionary landings in a training area?



Overshoot

- Downwind check
- Passenger briefing
- Pan-pan call

High-Level Inspection
COWLS Check

C – Civilization
O – Obstacles
W – Wind
L – Length
S – Surface

Low-Level Inspection

Approach and soft-field landing

Descent to 500' AGL for a low pass

- Radio calls as appropriate
- Descend to 1000' AGL
- Slow cruise



Considerations

- ✓ Landing at an aerodrome
 - length of the field is known, no need to check
- ✓ Low on fuel / low oil pressure + high oil temp / rough-running engine
 - omit low-level inspection
- ✓ Weather is deteriorating rapidly / medical emergency
 - omit or shorten high-level inspection
- ✓ Numerous obvious obstacles
 - conduct a series of progressively lower inspections.

SAFETY

- ! When practicing precautionary landings solo off-airport, avoid descending below 500' AGL

- ! If the landing is planned in advance, try to obtain as much info about the field as possible prior to taking off

- ! If a precautionary landing is warranted due to an emergency, it's important to make the decision to land early, to avoid additional limitations being imposed by the situation worsening

- ! If there is no urgency to land, make as many passes as necessary to ensure the field is safe and if you are having doubts about the suitability of the field – don't land there! Find another one!

- ! Avoid low airspeed and excessive angle of bank near the ground.

Conclusion

- ✓ Now you know how to inspect a potential landing site and carry out a safe approach and landing
- ✓ You are better equipped to deal with emergencies
- ✓ This exercise will prepare you for dealing with forced landings.
- ✓ Read for next lesson: Ex. 22, Forced Landings

