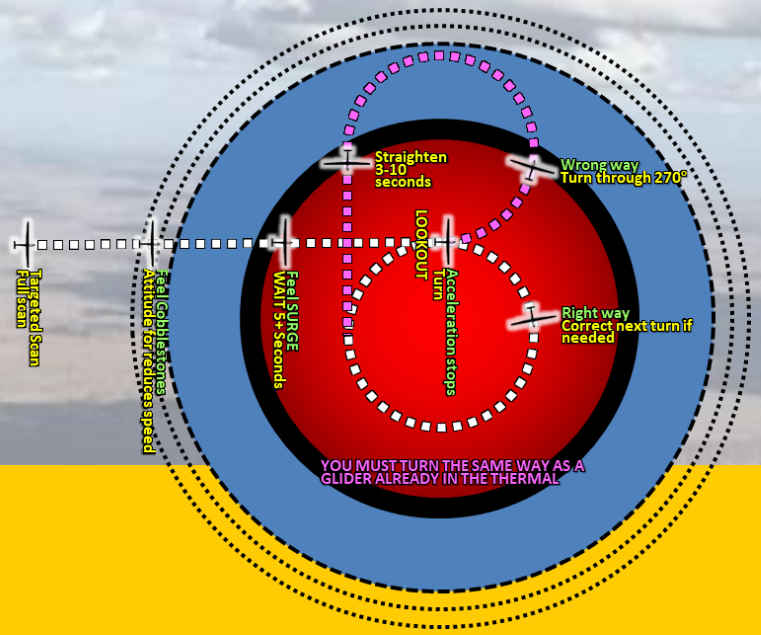
Theory Lesson # 10

Unit 31 – Thermal Entry



Aim

This unit covers:

- **Identifying a thermal**
- **Vario limitations**
- **Steps for thermal entry**

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Finding and Identifying Thermals

- To find a thermal, you should fly where you expect a thermal to be
  - Under a cumulus cloud,
  - Over a good thermal source and trigger
  - Where other gliders are thermalling
- As you approach a thermal you will feel the air become more turbulent, possibly lifting one wing or both, and maybe feel some sinking air
- Hopefully you'll then feel a **sustained upward surge** and you'll know you found a thermal

➢ It is very important to learn thermal entry by feel – don't rely on the vario (see next slide for vario limitations)

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Vario Limitations

1. Lag (discussed in Thermal Centring)
2. Gust sensitivity
    - Total energy variometers respond to changes in total energy (altitude and speed)
    - Turbulence around thermals causes horizontal gusts that may increase or decrease the total energy
    - Gusts can completely mask vertical indications making the vario useless for thermal entry
    - You will barely feel the horizontal gusts but you will feel vertical accelerations

- If you feel a sharp jolt it is probably just a gust
- If you feel a sustained surge, it is more likely to be a thermal

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3 Key Decisions for Thermal Entry

Will you turn?

- Identify if it is actually a thermal and not just a gust
- Is it safe to turn?
- Do you need to turn? (see GPC 40)

When to turn?

WAIT for a sustained surge

Which way to turn?

- Same direction as other gliders in the thermal
- If no other gliders pick a direction in advance *

*see the advanced syllabus for cues (a wing lifting is not a reliable indicator)

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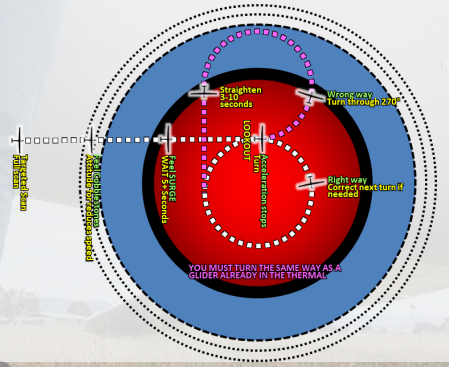
Thermal Entry

- You may notice the turbulence, cobblestone effect at the edge of the thermal. Keep flying straight
- You may then feel the sink next to the lift
- You may then feel the surge of the aircraft rising upwards as you enter the lift
- Fly straight as the upwards surge continues, and then turn when the acceleration stops

Refer to diagram next slide



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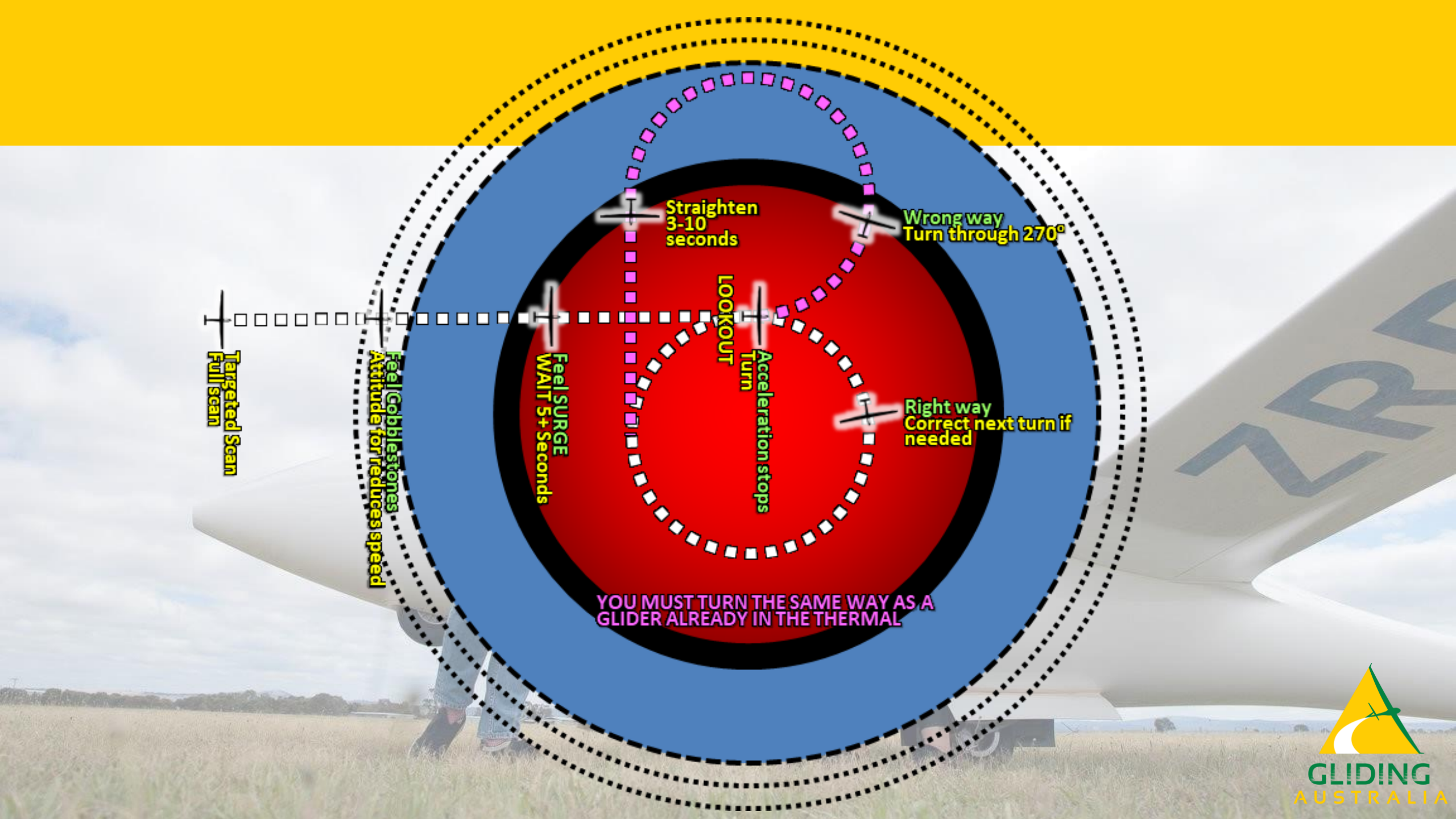

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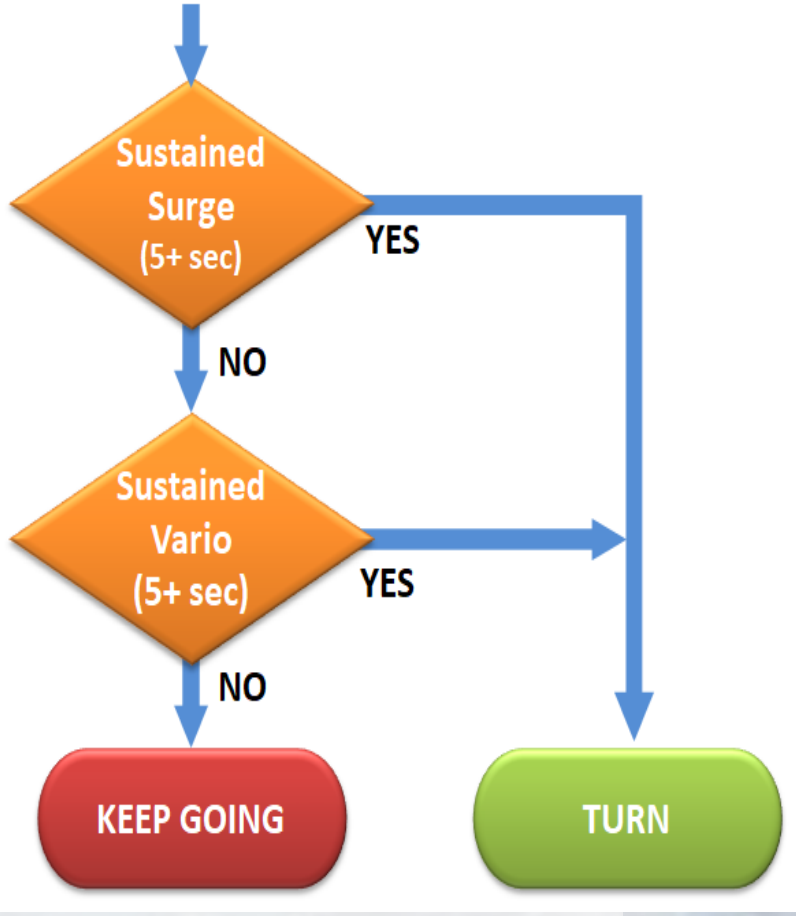
Steps to Thermal Entry



1. Complete a FULL and TARGETED scan
2. Slow down when you feel turbulence
   (10-20 knots below cruise speed)
3. DO NOT turn when you first feel the surge
4. Anticipate your turn and complete a TARGETED SCAN
5. Turn when:
   - you feel a **sustained** surge; or
   - there is a **sustained** vario indication; or
   - the feeling of vertical acceleration stops
6. If you feel a surge when you turn you've turned towards the core
7. If you get a sinking feeling when you turn you've turned away from the core and you need to correct (see next slide)
8. Re-trim to thermalling speed and re-centre as necessary

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If you've turned the 'wrong' way...

Depending on how far away from the core you are when you turn you will need to move your circle significantly across the thermal

- Continue the turn through ¾ of a turn (270º) relative to your original heading and then level out
- If you feel a **sustained surge** for at **least 3 seconds** then resume your turn, or if you don't feel a surge then resume the turn **after 10 seconds**

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