VICTORIA FLYING CLUB

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- Bookings, Questions

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Part II – Climbing and Descending Turns, Steep Turns

- Review *Basic* Turns, Climbs and Descents
- Definition and Motivation
- Initiating, Maintaining and Recovering Coordinated **Climbing** and **Descending Turns**
- Initiating, Maintaining and Recovering Coordinated **Steep Turns**
- Summary and Questions
- Pre-Flight Briefing

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Review Basic Turns, Climbs and Descents

- Mentally perform a **medium** (30° bank angle) *coordinated* **level turn** describing all required actions.
- What **controls** are to be used to **maintain** a *coordinated* **level turn** and what do they achieve individually?
- Describe **overbanking** and how it has to be corrected for during a medium level turn.
- Mentally perform a **basic climb** and **level off** and state all required actions. (**APT**)
- Mentally perform a **basic power-off descent** and **level off** and state all required actions. (**PAT**)
- How do we establish and maintain a **combined nose-up** and **left-banked** attitude?

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Climbing and Descending Turns

- Turning *while* climbing or descending
- **Heading** and **altitude** change *simultaneously*
- Applications: **Departures**, **Arrivals**, **Circuits**

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Initiating a Climbing Turn

- In cruise-attitude **lookout** ahead and above in turn direction
- Establish a *stable* **constant speed climb** *first* – **APT**
- Establish a *coordinated* **constant rate turn** *second*
- Climbing turn will be established *simultaneously* later

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Maintaining a Climbing Turn

- Apply **elevator** to maintain **pitch attitude** and **airspeed**
- Apply **aileron** to maintain **bank attitude** – correct **overbanking**
- Apply **rudder** to maintain *coordinated* **constant rate turn**
- Maintain **lookout** and monitor outside **references** and **instruments**

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Recovering a Climbing Turn

- Continue to **lookout** observing **references** during recovery
- Recovery order depends on achieved target (heading or altitude) and may require *simultaneous* control inputs
- **Anticipate** turn recovery to establish desired **heading** – ***half bank angle***
- **Anticipate** climb recovery to establish desired **altitude** – ***10% VSI***
- Remain *coordinated* using **rudder** and use **APT** to recover climb

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Initiating a Descending Turn

- In cruise-attitude **lookout** ahead and below in turn direction
- Establish a *stable* **constant speed descent** *first* – **PAT**
- Establish a *coordinated* **constant rate turn** *second*
- Descending turns will be established *simultaneously* later

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Maintaining a Descending Turn

- Apply **elevator** to maintain **pitch attitude** and **airspeed**
- Apply **aileron** to maintain **bank attitude** – correct **underbanking**
- Apply **rudder** to maintain *coordinated* **constant rate turn**
- Maintain **lookout** and monitor outside **references** and **instruments**

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Recovering a Descending Turn

- Continue to **lookout** observing **references** during recovery
- Recovery order depends on achieved target (heading or altitude) and may require *simultaneous* control inputs
- **Anticipate** turn recovery to establish desired **heading** – ***half bank angle***
- **Anticipate** climb recovery to establish desired **altitude** – ***10% VSI***
- Remain *coordinated* using **rudder** and use **PAT** to recover climb

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Steep Turns

- **Steep** turns – beyond ***30°*** bank angle
- **Evasive actions** and collision avoidance (consider climbs and descents), **canyon turns**, **steep descending turns**
- Control **coordination practice**
- Higher **load factor**, **stall speed** and **required power**

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Performing a Steep Level Turn

- **HASEL** – Height, Area, Safety, Engine, Lookout
- Initiate steep level turn like medium level turn
- **Add power** beyond ***30°*** bank angle to maintain **safe airspeed** above increased stall speed
- Correct as necessary to **maintain attitude**
- Remain **coordinated** and correct **overbanking**
- **Reduce power** accordingly during recovery
- Left and right turns require *different* control inputs

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Performing a Minimum Radius Turn

- **HASEL** – Height, Area, Safety, Engine, Lookout
- Consider **wind** for minimum radius over ground
- **Slow down** to maximum endurance speed (***52*** *KIAS*) and **extend flaps** to ***20°***
- Establish a coordinated steep turn adding **full power beyond** ***30°*** bank angle
- Recover and **gain airspeed** before raising flaps and reducing power

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Performing a Steep Descending Turn

- **HASEL** – Height, Area, Safety, Engine, Lookout
- Initiate steep descending turn like descending turn
- **Reduce power** to **idle**
- Correct as necessary to **maintain attitude**
- Remain **coordinated** and correct **overbanking**
- Avoid spiral dive and monitor airspeed

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Summary / Quiz

- Mentally perform a *coordinated* **climbing** (2000' to 3000') **medium** (30° bank angle) **turn** to the right (270° to 090°) describing all required actions.
- Mentally perform a *coordinated* **descending** (3000' to 2800') **gentle** (15° bank angle) **turn** to the left (090° to 270°) describing all required actions.
- Mentally perform a *coordinated* **steep** (45° bank angle) **level turn** to the left (090° to 270°) describing all required actions.

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Pre-Flight Briefing

- Exercise
- Training Area
- Departure and Arrival Procedures
- Weather Briefing / NOTAMs
- Aircraft and Documents
- Time and Fuel Requirements
- Safety Considerations and Responsibilities

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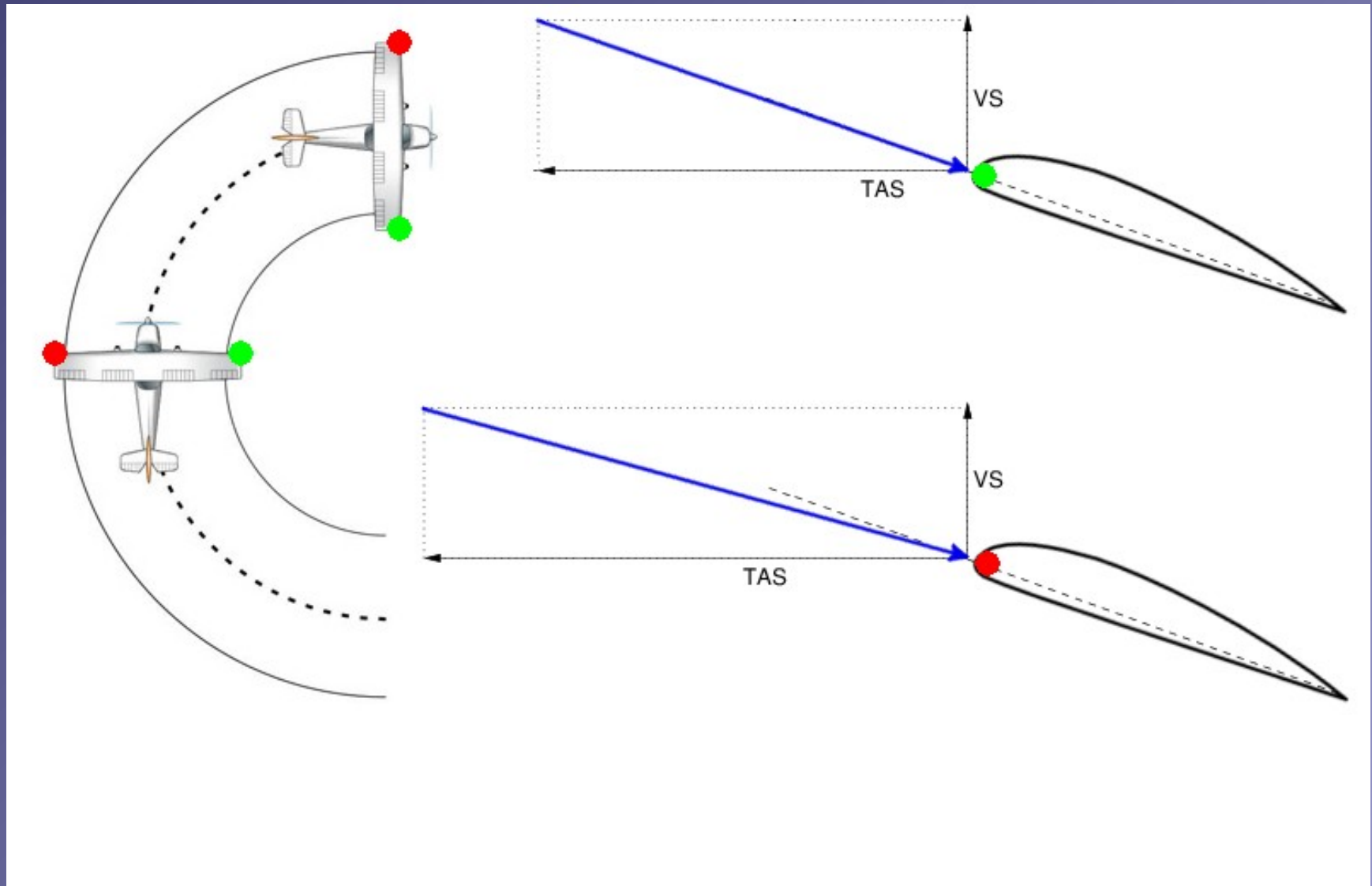
Climbing Turn – Overbanking



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Descending Turn – Underbanking