



VICTORIA FLYING CLUB

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Precautionary Landing

- Review Circuits, Illusions Created by Drift and Landings
- Definition and Motivation
- **Precautionary Landing**
- Summary and Questions
- Pre-Flight Briefing



Review Circuits, Illusions Created by Drift and Landings

- What are the legs of a standard aerodrome traffic circuit?
- What would be the ideal direction of the wind with respect to the circuit and why?
- What illusions created by drift do we need to be aware of when flying close to the ground?
- What is the proper reaction if the turn to final turns out to be too wide and why?
- Mentally perform a short and soft-field landing.



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Definition and Motivation

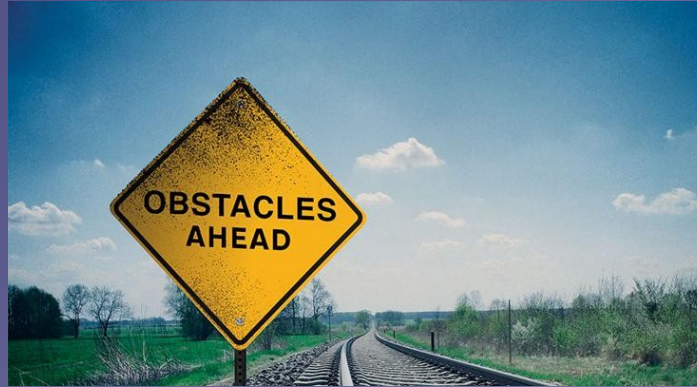


- *Planned* or **unplanned landing** in *unknown terrain* or **airfield**
- A **plan** is only a plan until put to action – *dynamic re-planning*
- *Constantly* evaluate the operational **context** and make **decisions**
- Situations: **airfield** with *limited data*, *failed aircraft systems*, *low fuel*, *deteriorating weather*, pilot / crew or passenger **health**, loss of **situational awareness**, time of day or **darkness**



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Landing Site Selection – COWLS



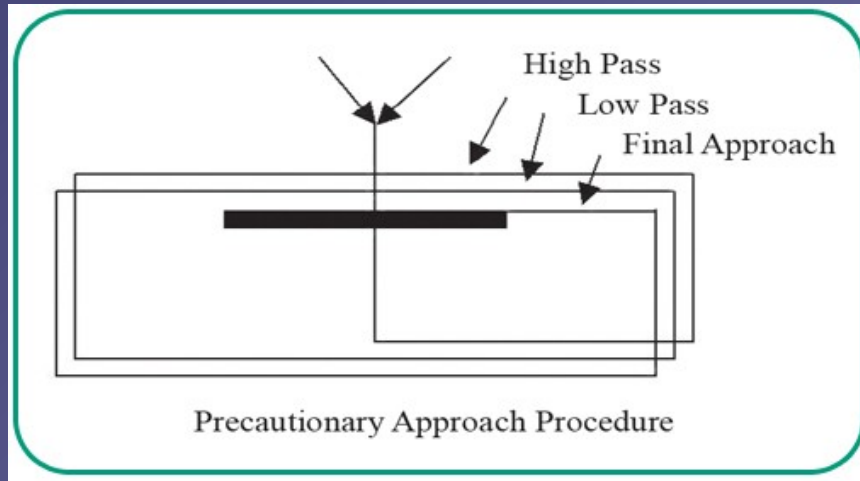
- **C**ivilization
- **O**bstacles
- **W**ind
- **L**anding (Take-Off) Area / Length
- **S**urface / Slope
- Landing Type Selection: **N**ormal, **S**hort, **S**oft, **C**rosswind





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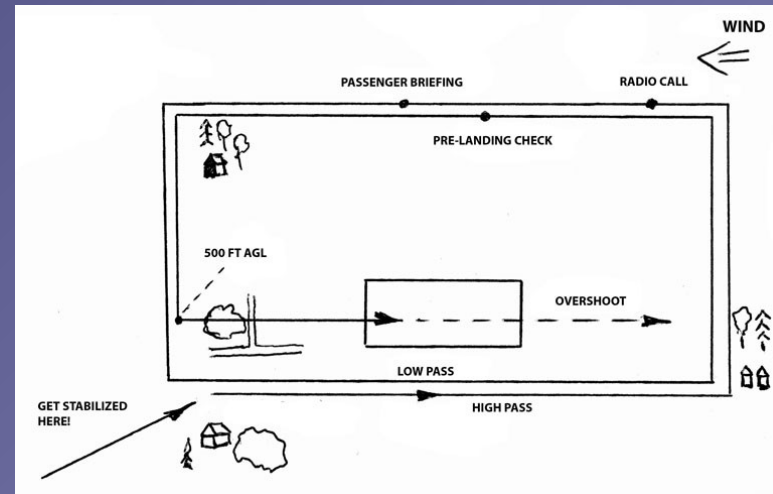
High Pass



- Assess *overall situation* and **environment** – establish **headings**
- **Wind** can be derived from cues such as smoke stacks, trees and water surfaces
- *Number of passes, shape, altitude and airspeed* depend on situation
- Use **heading indicator bug** to establish runway track and circuit layout (orientation landmarks)
- Overfly landing site *slightly* offset for *better visibility* from the pilot seat
- Example: circuit altitude **1000' AGL**, low cruise at airspeed **90 KIAS**
- 90 KIAS → 150 ft/s, 10s → 1500 ft length (optional)
- *Sufficient evidence to not support landing decision?*



Low Pass



- *Stabilized* descend from high pass altitude similar to a low approach and go-around
- Assess **details** such as **obstacles** and **surface** condition
- Number of **passes**, **shape**, **altitude** and **airspeed** depend on situation
- **Trim** properly for *stable* **airspeed** and **altitude** maintaining **obstacle clearance**
- Overfly landing site *slightly* offset for *better* **visibility** from the pilot seat
- Example: altitude **500' AGL**, maintain approach and low pass airspeed **70 KIAS**, flaps **10°**
- 60 KIAS → 60 NM/h → 1 NM / min → 100 ft / s, 10s → 1000 ft length (required)
- *Sufficient* **evidence** to support **landing decision**?



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Low Approach



- *Final* assessment of **landing site**, **landing type**, **approach path** and **configuration**
- *Number* of **approaches**, **shape**, **altitude** and **airspeed** depend on situation
- Example: short-field approach speed **61 KIAS**, flaps **30°**, go-around at **50' AGL**
- Configuration according to selected landing type
- *Final assessment* for **landing decision** – in favor or against



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Communication

Inform ATC, FSS, FISE

Briefings

Cessna 172 CHECKLIST

PREFLIGHT INSPECTION

1. Aircraft documents ----- ON BOARD
2. Fire extinguisher ----- CHECK
3. First Aid Kit ----- CHECK
4. Control Lock ----- REMOVE
5. Flight controls and trim ----- CHECK
6. Ignition switch ----- OFF
7. Electrical equipment, radios ----- OFF
8. Master switch ----- ON
9. Flaps ----- DOWN
10. Fuel gauges ----- CHECK QUANTITY
11. Master ----- OFF
12. External inspection

PASSENGER BRIEFING

1. Doors, windows
2. Seatbelts
3. Fire Extinguisher
4. First Aid Kit
5. ELT
6. Controls
7. Smoking
8. Life Vests
9. Loose Articles - Secure

ENGINE START

1. Documents, safety equipment and preflight ----- COMPLETE
2. Passenger Briefing ----- COMPLETE
3. Seats/Harnesses ----- SECURE
4. Brakes ----- SET
5. Avionics Power Switch ----- OFF
6. Circuit Breakers ----- CHECK IN
7. Fuel valve ----- LEFT
8. Mixture ----- RICH
9. Throttle ----- SET
10. Carb Heat ----- OFF
11. Master ----- ON
12. Beacon Light ----- ON
13. Primer ----- As Req & locked
14. Propeller area ----- CLEAR
15. Mags ----- START
16. Throttle ----- 1000 RPM
17. Oil Pressure ----- CHECK

AFTER START

1. Avionics Power Switch ----- ON
2. Flaps ----- RETRACT
3. Nav Lights ----- ON
4. Transponder ----- STANDBY
5. Radios ----- SET
6. ATIS ----- COPY
7. Flight Instruments ----- CHECK
8. Fuel Valve ----- RICH
9. Taxi clearance ----- CLEAR
10. Brakes ----- OFF
11. Flight Instruments ----- CHECK

RUN UP

1. Brakes ----- SET
2. Fuel Valve ----- BOTH TANKS
3. Mixture ----- RICH (+3000)
4. Area ----- CLEAR
5. Throttle ----- 1700 RPM
6. Oil Pressure/Temp ----- CHECK
7. Suction Gauge ----- CHECK
8. Ammeter ----- CHECK
9. Magneto ----- CHECK BOTH
10. Carb Heat ----- CHECK DROP
11. Mixture ----- CHECK LEANING
12. Full idle with carb heat ----- ON
13. Oil Pressure/Temp ----- CHECK
14. Throttle ----- 1000 RPM

BEFORE TAKE OFF

1. Belts, Doors, Windows, Seats - SECURE
2. Primer ----- LOCKED
3. Master ----- ON
4. Mags ----- BOTH
5. Carb Heat ----- COLD
6. Mixture ----- RICH
7. Flaps ----- AS REQUIRED
8. Trim ----- SET FOR T/O
9. Fuel ----- BOTH
10. Flight Instruments ----- CHECK
11. Flight Controls ----- FREE & CORRECT
12. Radios ----- SET
13. Take off clearance ----- OBTAIN

LINE UP

1. Time off ----- RECORD
2. Transponder ----- ALT (check code)
3. Landing Light ----- ON
4. Strobe Lights ----- ON

BEFORE LANDING

1. Primer ----- LOCKED
2. Master ----- ON
3. Mags ----- BOTH
4. Carb Heat ----- ON
5. Mixture ----- RICH
6. Fuel Valve ----- BOTH
7. Brakes ----- CHECK
8. Seats, Belts, Harnesses ----- SECURE

AFTER LANDING

1. Taxi Clearance ----- OBTAIN
2. Transponder ----- OFF
3. Carb Heat ----- OFF
4. Wing Flaps ----- UP
5. Strobe Lights ----- OFF
6. Landing Light ----- OFF
7. Master ----- OFF
8. Master ----- OFF

TAXI

1. Taxi Clearance ----- OBTAIN
2. Transponder ----- ALT (check code)
3. Landing Light ----- ON
4. Strobe Lights ----- ON
5. Live mag check at idle
6. Mixture ----- Idle Cut Off
7. Mags ----- OFF
8. Master ----- OFF

- Proceed according to **chart** details and *Canadian Flight Supplement* procedures
- Inform ATC, Flight Service Station, Flight Information Service En-route *as applicable*
- Consider informing other aircraft or declaring urgent situation – PANPAN
- Conduct passenger, crew approach and emergency **briefings**
- Follow and confirm required actions using **checklists**



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Safety Considerations

- Maintain a *safe* **airspeed**
- Maintain a *safe* **height** (obstacle clearance)
- Maintain a *good* **lookout**
- Turn *accurately* and remain **coordinated**
- Anticipate turns and compensate **drift** on legs
- Do *not* **overbank** or **skid**
- Follow published **procedures** in aerodrome environments



Summary / Quiz

- What situations may lead to a precautionary landing?
- Explain the acronym COWLS.
- Mentally perform a precautionary landing due to deteriorating weather on a grass field. State all observations and actions.
- What role plays proper communication when deciding for a precautionary landing?



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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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Additional Materials

- Additional materials for Precautionary Landing
- Flight Instruction Guide – Exercise 21, Lesson Plans 24, 26