



VICTORIA FLYING CLUB

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Aerodrome Traffic Circuit

- Review Slow Flight and Take-Off
- Definition and Motivation
- **Aerodrome Traffic Circuit**
- Summary and Questions
- Pre-Flight Briefing



Review Slow Flight and Take-Off

- Mentally perform a recovery from slow flight and state all observations and required actions.
- What actions have to be completed before initiating a take-off?
- Describe the take-off phases *line-up*, *run* and *initial climb*.
- What are the criteria for a normal take-off?
- Mentally perform a normal take-off and state all observations and actions.
- What causes wake-turbulence and how does it affect your take-off?



Definition and Motivation

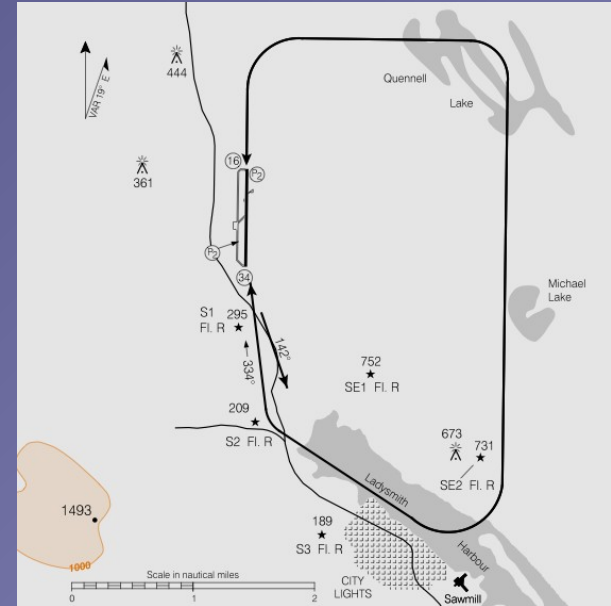


- *Standardized rectangular **traffic circuit** at aerodromes*
- *Ordered and organized flow of traffic to avoid conflicts*
- Safety and **traffic separation, stabilized approaches**
- Types: **controlled** and **uncontrolled** aerodrome environment
- Applications: portion of a circuit is flown in every single flight



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Circuit Layout



- Legs: **Take-Off, Crosswind, Downwind, Base, Final**
- Sides: **Upwind and Downwind**
- *Standard left-hand* aerodrome circuit with **1000 ft AAE** circuit height
- *Standard* crosswind and base legs transition between **500 ft** and **1000 ft AAE**
- Consult *Canadian Flight Supplement* for specific layout and procedures
- Modifications due to **obstacles, noise abatement** and **operational constraints**



Circuit Procedures

- Climb to **500 ft AAE** or *as assigned* on **take-off** leg
- Adjust **climb airspeed** after clearing **obstacles** *as applicable* and retract **flaps** at **safe altitude** (**400 ft AGL**)
- Climb to **1000 ft AAE** or *as assigned* on **crosswind** leg (*clear ahead and right*)
- Level off (**APT**) and turn downwind (*clear right*)
- Perform pre-landing **checks** and *mandatory call* on downwind
- Initiate descent (**PAT**) at **45°** or *as assigned* past abeam threshold (*clear right*)
- Turn **base leg** establishing a **stabilized approach** at **descent airspeed** (**70 KIAS**)
- Set **flaps** *as required* on downwind, base and final legs (**61-70 KIAS**)
- Continue **stabilized approach** on final leg towards threshold window
- Maintain *speed and spot* with stable descent rate
- **Go around** if necessary (traffic, bailed landing) and continue in the circuit
- Maintain good **lookout** for **separation: situational awareness**



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Circuit Radio Procedures



- Communication message pattern: *Who? Where? What? With?*
- Report **entry** leg *as applicable* and **intentions**
- Report **downwind** leg (*standard left or right*) and **intentions**
- Report **final** leg *as applicable* and **intentions**
- Report crossing **midfield** *as applicable* and **intentions**
- Report *lost traffic* or *traffic in sight* – advise if *unable* to follow instructions



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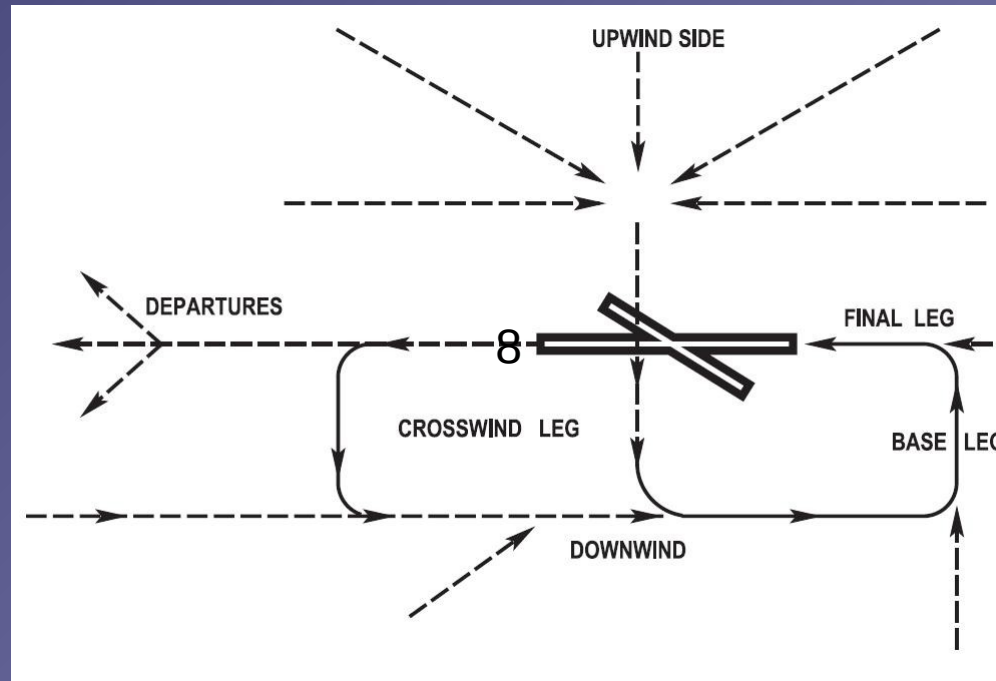
Controlled Airports



- **Control zones** with published approach procedures to join circuit
- Standard control zone extends **5 NM** radius up to **3000 ft AGL**
- Modified circuit procedures and ATC instructions due to traffic situation
- Airspace requirements: weather minima, clearances, equipment



Controlled Airports Procedures

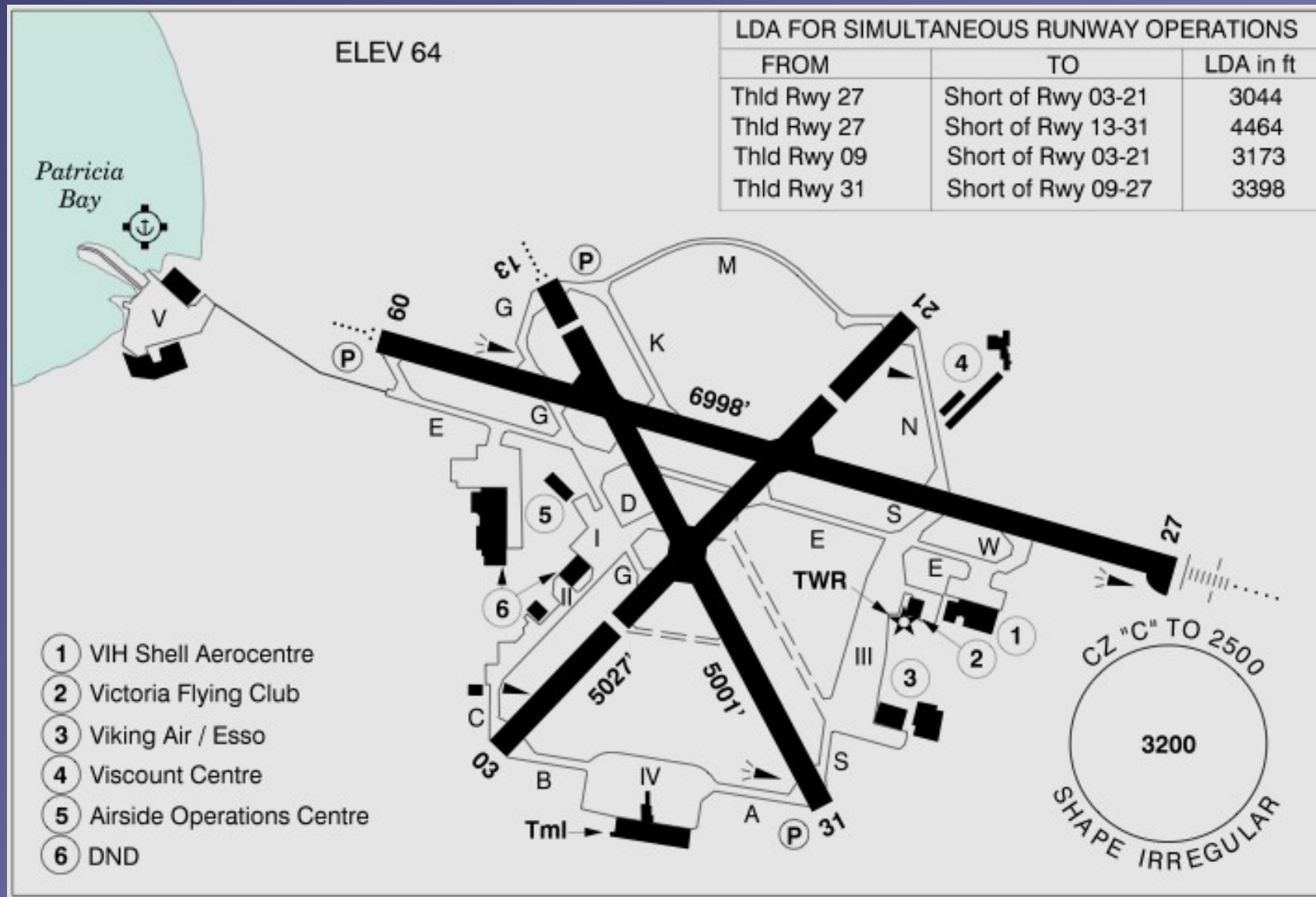


- Concrete **procedures** are published in the *Canadian Flight Supplement*
- **Instructions** are to be followed on *towered airports*
- Circuit procedures may be modified frequently at busy controlled airports
- **Advisories** help decision making on *non-towered airports*
- Maintain *constant lookout*, traffic **separation** and **sequence**



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Towered Airports – CYYJ





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Towered Airports – CYYJ

PRO

PPR for non-transponder ops within Victoria Twr class "C" airspace 250-655-2866.
VFR dep acft ctc clnc del unless closed by ATIS. Rgt hand circuits Rwy 09, 21 & 31 (CAR 602.96). Ngt ops Rwy 03/21 not auth exc for tkof on Rwy 03. Rwy 03/21 restricted to max 65,000 lbs for tkof and ldg. No weight restriction for taxiing acft Rwy 03/21 south of Rwy 13.

VFR ARR/DEP ROUTES

ARRIVALS:

Beaver Point, Brentwood, Cordova, Cowichan, D'arcy Island, Shawnigan Lake, Stuart Island

ALL ROUTES - Obtain ATIS message

Contact outer twr 119.1

Squawk assigned transponder code

Fly assigned routing

Maintain 2000' until cleared lower or turning final

Contact 119.7 at arrival point for landing instructions

NOTE: If unable contact on 119.7 at arrival point, proceed to final approach and maintain 2000'

DEPARTURES:

Beaver Point, Brentwood, Cordova, Cowichan, D'arcy Island, Moresby Island, Shawnigan Lake, Stuart Island

ALL ROUTES - Fly direct to assigned departure point

Maintain 1500' until cleared higher

Contact 119.1 leaving 1000'



Non-Towered Airports / MF – CYCD

PRO

AIRPORT RESTRICTION: Pursuant to CAR 602.96 (3)(d) aprt use rstd acft with a wingspan of less than 118'

Circuit alt 1200 ASL. Avoid flt over built-up areas below 1000 ASL.

Rwy 34:Rgt hand circuits (CAR 602.96). Maintain 1200 ASL til over Ladysmith Harbour. See VTPC.

Rwy 16:Climb to safe alt. Left turn hdg 142° til over Ladysmith Harbour. Climb over Harbour to 1000 ASL BPOC. See VTPC.

Gliders:Circuits to W of aprt.

Procedures for crossing the southern Strait of Georgia within Tml Class C airspace refer to Vancouver Intl, VTPC for Crossing the Southern Strait of Georgia.

ATS REQUIREMENTS:

All VFR acft arriving, departing or transiting the Vancouver or Victoria Tower Class C or D airspace require a transponder code.

- All acft departing Vancouver or Victoria Intl (including Water Aerodrome) call Kamloops FIC at 866-992-7433 (866-WXBRIEF) or 866-541-4101 for code assignment at least 30 min prior to flight or file a VFR Flight Plan/Flight Itinerary.

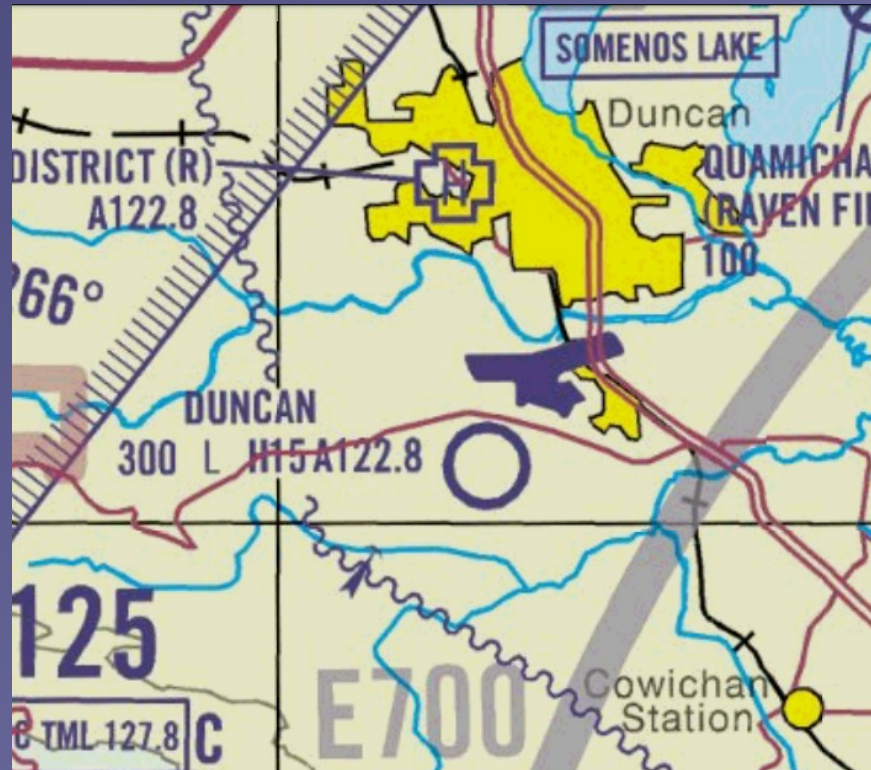
- All acft arriving Vancouver, Victoria Intl (including Water Aerodrome) or transiting Vancouver or Victoria Control Zones obtain a code from one of the following ATS units: Vancouver Harbour, Nanaimo, Victoria Harbour, Boundary Bay, Langley, Abbotsford or Pitt Meadows, or call Kamloops FIC at 866-992-7433 (866-WXBRIEF) or 866-541-4101.

- All acft arriving Victoria Intl from a non NAV CANADA site call Kamloops FIC at 866-992-7433 (866-WXBRIEF) or 866-541-4101 for code assignment at least 30 minutes prior to flight or file a VFR Flight Plan/ Flight Itinerary.



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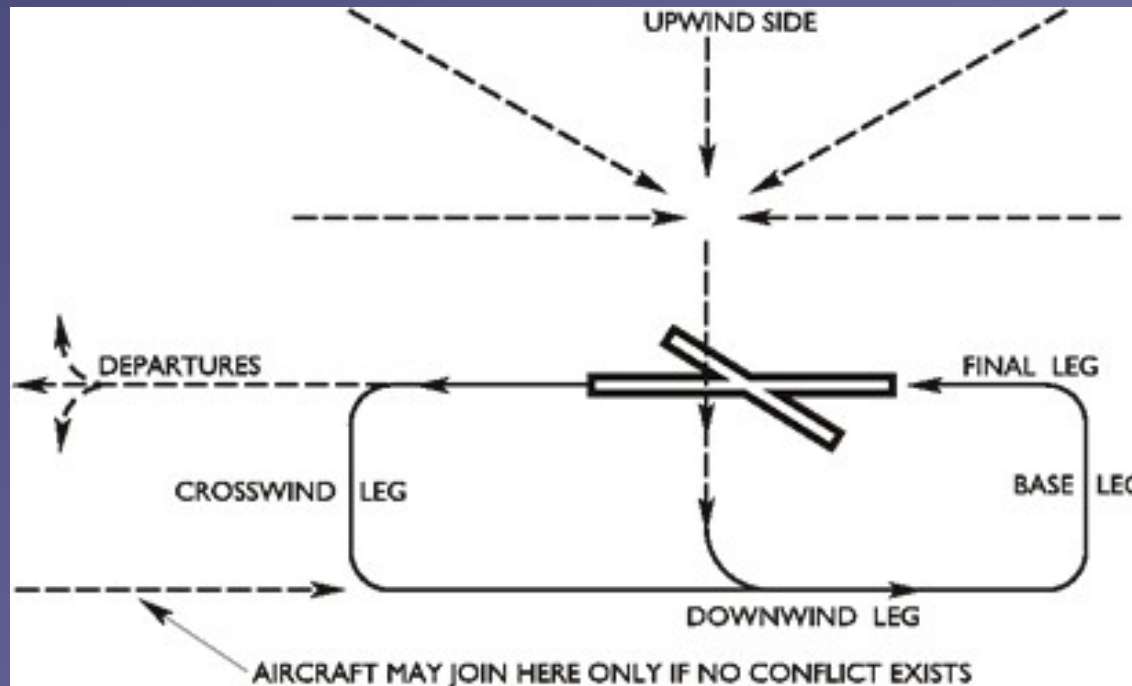
Uncontrolled Aerodromes / MF or ATF



- Located in *uncontrolled airspace* (G) and do *not necessarily* require radio contact, clearances or special equipment
- Mandatory Frequency (MF) versus Aerodrome Traffic Frequency (ATF)
- Own **separation** and *careful lookout* required – possible ATF **NORDO** traffic



Uncontrolled Aerodromes Procedures



- Concrete **procedures** are published in the *Canadian Flight Supplement*
- Perform standard communications and advise other aircraft of your **position** and **intentions**
- Be aware of and lookout for *potential* ATF **NORDO** traffic
- Maintain *constant* **lookout**, traffic **separation** and **sequence**



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Uncontrolled Aerodromes / ATF – CAM3

DUNCAN BC

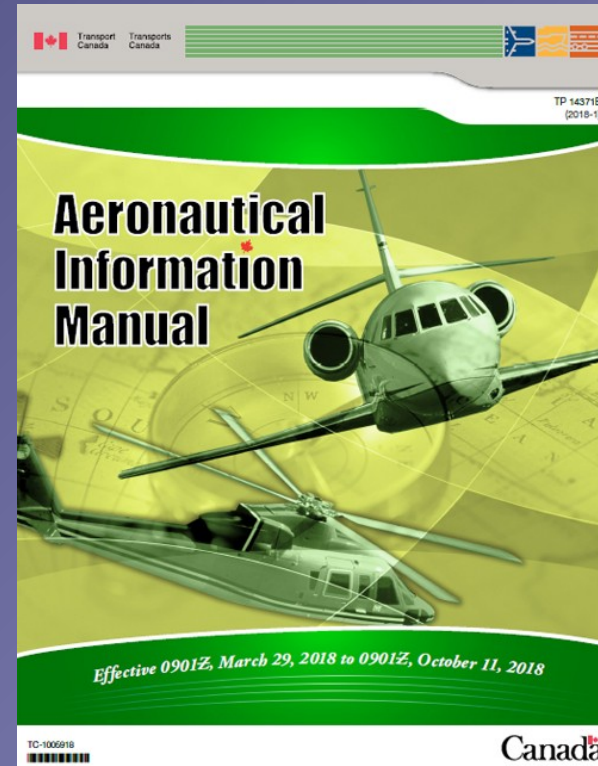
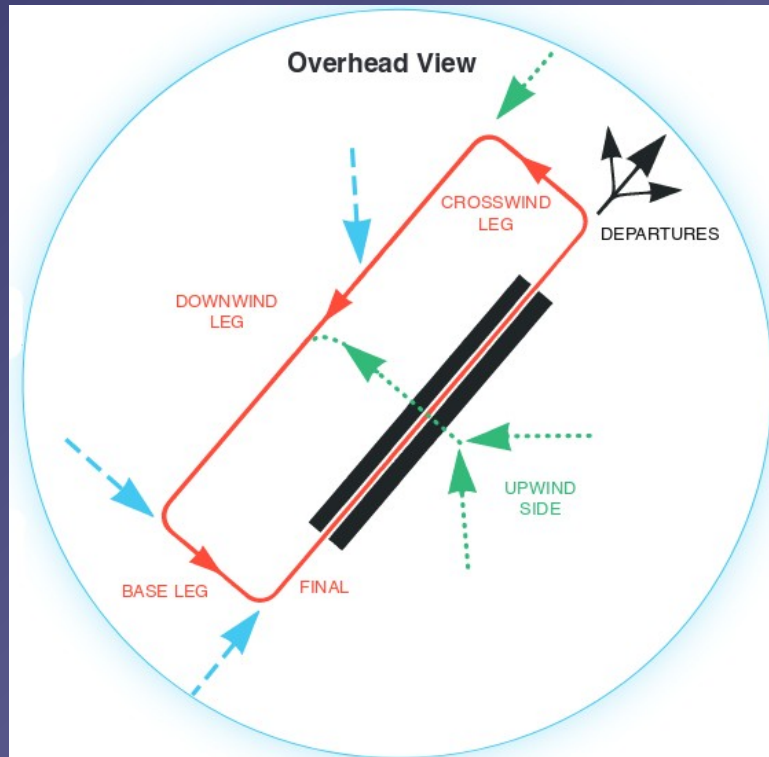
CAM3

REF	N48 45 30 W123 43 00 Adj SSW 17°E (2013) UTC-8(7) Elev 300' VTA A5004	
OPR	Duncan Flying Club 250-216-8001 Reg	
PF	B-1 C-2,3,4,5,6	
FLT PLN FIC	NOTAM FILE CYCD Kamloops 866-WXBRIEF (Toll free within Canada) or 866-541-4101 (Toll free within Canada & USA)	
SERVICES S	4,5	
RWY DATA RCR	Rwy 13/31 1520x30 asphalt. Rwy 31 up 0.5%. Thld Rwy 13 displ 70'. Opr	
LIGHTING	13-(TE LO), 31-(TE LO)	
COMM ATF	tfc 122.8 2NM 3300 ASL	
PRO NOISE	Rgt hand circuits Rwy 13 (CAR 602.96). Noise Abatement Procedures: dep Rwy 31, climb rwy hdg, then climb hdg 291° when safe, til clear of subdivision. Avoid noise sensitive area to the E.	
CAUTION	Ravines at both ends; gravel pit & 4' windrow W side rwy. Downdrafts, crosswinds & windshear may be encountered. Trees on apch to Rwy 31. <u>Strongly</u> recommended that only pilots familiar with apt & lcl terrain should use this apt dur hrs of darkness.	



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Circuit Joining Procedures



- Tower Frequency with concrete **clearances** and **instructions**
- Mandatory Frequency (MF) with and without **advisories** (ground station)
- Air Traffic Frequency (ATF) with *potential* **NORDO** traffic
- Review *Aeronautical Information Manual* RAC 4.3-4.5 for *unambiguous* clarification



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Transitioning Control Zones

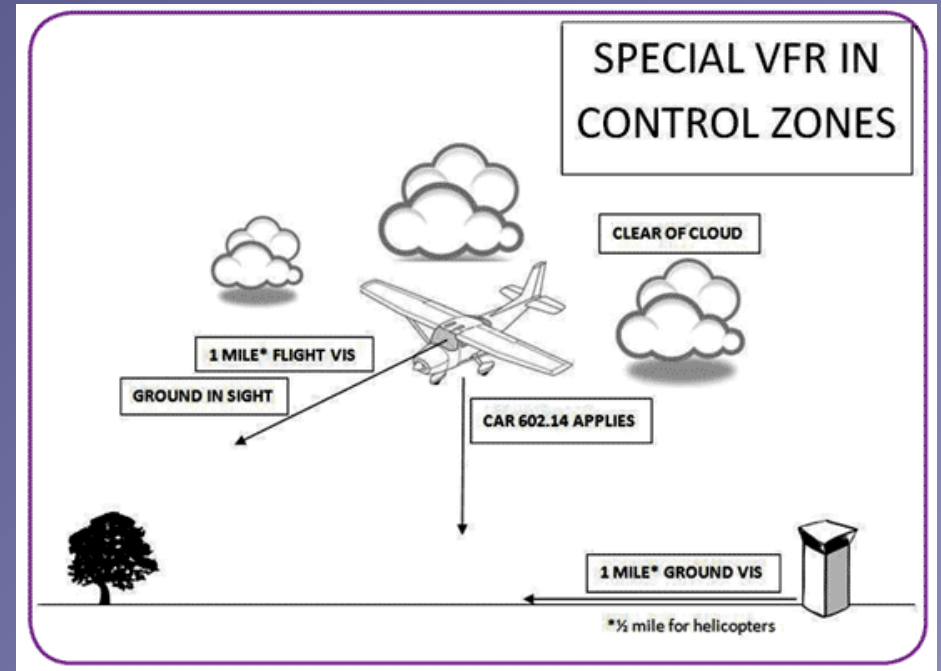
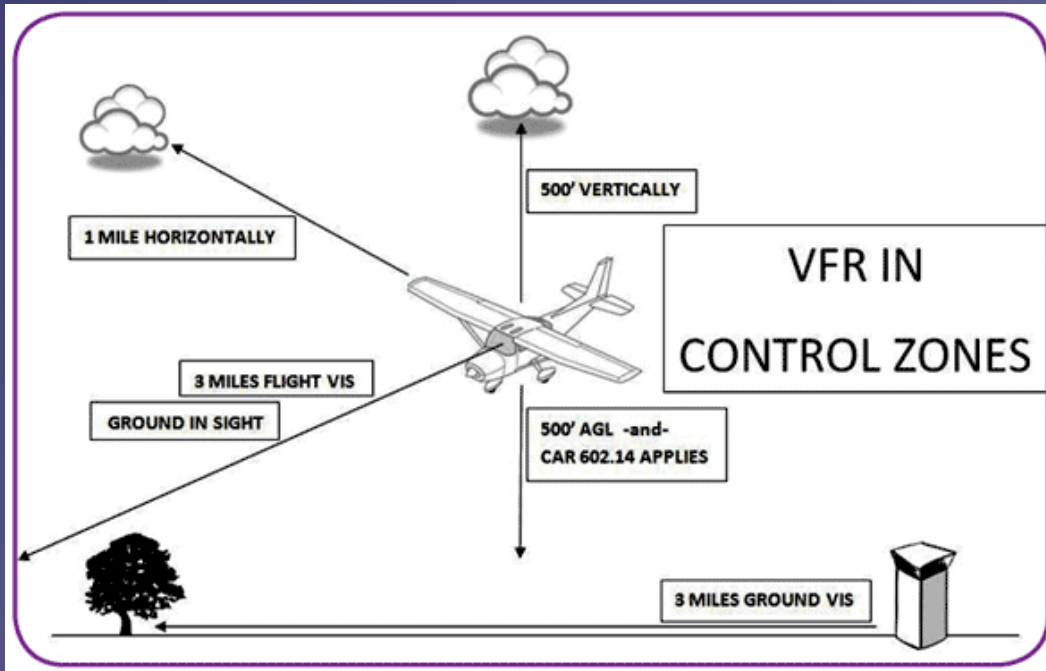


- Crossing requirements depend on **airspace** structure and ATC entity
- Requirements regarding **radio** contact, **transponder**, **clearance**, **routing**
- Refer to *Terminal Chart* and *Canadian Flight Supplement* procedures
- Control zone versus terminal area recommended **transition routes**



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Special VFR



- Allows to enter a **control zone** in IMC under day VFR for the purpose of landing at the airport *only*
- Special VFR *has to be* requested by the pilot and is not offered by ATC
- Special VFR *can be* denied due to IFR traffic or operational constraints



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Summary / Quiz

- Describe the standard circuit with respect to legs, sides, directions and heights.
- What are the three main types of circuit environments and how do they differ?
- Where do you find what particular circuit and procedure applies to an aerodrome?
- Assume you want to join the Nanaimo traffic circuit approaching from Victoria. The ATIS and FSS advisory inform you that the prevailing wind and existing traffic favor runway 34. Mentally perform the procedure and state all observations and 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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Additional Materials

- Additional materials for the Circuit
- Flight Instructor Guide – Exercise 17, Lesson Plan 2, 8-12










VFR Minima

Figure 2.7 – VFR Weather Minima*

AIRSPACE		FLIGHT VISIBILITY	DISTANCE FROM CLOUD	DISTANCE AGL
Control Zones		not less than 3 miles**	horizontally: 1 mile vertically: 500 feet	vertically: 500 feet
Other Controlled Airspace		not less than 3 miles	horizontally: 1 mile vertically: 500 feet	—
Uncontrolled Airspace	1 000 feet AGL or above	not less than 1 mile (day) 3 miles (night)	horizontally: 2 000 feet vertically: 500 feet	—
	below 1 000 feet AGL – fixed-wing	not less than 2 miles (day) 3 miles (night) (see Note 1)	clear of cloud	—
	below 1 000 feet AGL – helicopter	not less than 1 mile (day) 3 miles (night) (see Note 2)	clear of cloud	—



NORDO – Visual Signals

Colour and Type of Signal	To Aircraft in Flight	To Aircraft on the Aerodrome
 Steady green	Cleared to land	Cleared for takeoff
 Steady red	Give way to other aircraft and continue circling	Stop
 Series of green flashes	Return for landing	Cleared to taxi
 Series of red flashes	Aerodrome unsafe – do not land	Taxi clear of landing area in use
 Series of white flashes	Land at this aerodrome and proceed to apron	Return to starting point on aerodrome
 Series of alternate red and green flashes	Danger – be on the alert	Danger – be on the alert
 Red pyrotechnic	Notwithstanding any previous instructions do not land for the time being	
<p>① Circling means continue tracking in the aerodrome traffic circuit. Do not orbit in position.</p> <p>② Clearance to land and taxi will be given in due course.</p>		



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ATC Circuit Modifications

- ATC *may* issue **instructions** to modify the standard circuit pattern at controlled airports
- Use cases include: conflict resolution, traffic separation, wake-turbulence separation, emergencies
- Examples illustrate radio exchanges that lead to circuit pattern modifications



Circuit Side Changes after Take-Off

- **ATC:** *“GBMO, (after touch and go) make one right-hand (left-hand) circuit”*
- **Aircraft:** *“Make one right-hand (left-hand) circuit, GBMO”*
- **ATC:** *“GBMO, (after touch and go), resume left-hand (right-hand) circuits”*
- **Aircraft:** *“Resume left-hand (right-hand) circuits, GBMO”*



Circuit Side Changes from Downwind

- **ATC:** *“GBMO, make a left-turn, cross midfield, join right downwind runway 27”*
- **Aircraft:** *“Make a left-turn, cross midfield, join right downwind runway 27, GBMO”*
- **ATC:** *“GBMO, make a left turn, cross threshold runway 27, join right downwind runway 27”*
- **Aircraft:** *“Make a left turn, cross threshold runway 27, join right downwind runway 27, GBMO”*



Leg Extensions after Take-Off

- **ATC:** *“GBMO, climb runway heading 1000' before turning crosswind”*
- **Aircraft:** *“Climb runway heading 1000' before turning crosswind, GBMO”*
- **ATC:** *“GBMO, maintain runway heading, I call your crosswind”*
- **Aircraft:** *“Maintain runway heading, you call my crosswind, GBMO”*



Leg Extensions from Downwind

- **ATC:** “GBMO, extend downwind, I call your base”
- **Aircraft:** “Extend downwind, you call my base, GBMO”
- **ATC:** “GBMO, extend downwind, you are number 4, follow traffic ahead”
- **Aircraft:** “Extend downwind, number 4, follow traffic ahead – in sight, GBMO”



Orbits

- **ATC:** *“GBMO, make one left-hand (right-hand) orbit, re-join downwind”*
- **Aircraft:** *“Make one left-hand (right-hand) orbit, re-join downwind, GBMO”*
- **Aircraft:** *“GBMO, orbit complete”*
- **ATC:** *“GBMO, enter a left-hand (right-hand) orbit”*
- **Aircraft:** *“Enter a left-hand (right-hand) orbit, GBMO”*



Wake-Turbulence Avoidance

- **ATC:** *“GBMO, maintain 1000' and overfly runway”*
- **Aircraft:** *“Maintain 1000' and overfly runway, GBMO”*
- **ATC:** *“GBMO, due to wake-turbulence, low approach only, not below 500”*
- **Aircraft:** *“Low approach only, not below 500', GBMO”*
- **ATC:** *“GBMO, turn early crosswind when safe”*
- **Aircraft:** *“Turn early crosswind when safe, GBMO”*
- **Aircraft:** *“GBMO, request early crosswind”*
- **ATC:** *“GBMO, early crosswind approved”*



Runway Changes

- **ATC:** *“GBMO, runway change, join downwind runway 21”*
- **Aircraft:** *“Join downwind runway 21, GBMO”*
- **ATC:** *“GBMO, runway change, continue left turn, cross midfield, join downwind runway 09, GBMO”*
- **Aircraft:** *“Continue left-turn, cross midfield, join downwind runway 09, GBMO”*
- **ATC:** *“GBMO, runway change, make a right turn, cross threshold 09, join right downwind 27”*
- **Aircraft:** *“Make a right turn, threshold 09, join right downwind 27, GBMO”*