



THIS SITE IS RESERVED FOR
MODEL AIRCRAFT OPERATION ONLY

NO

UNAUTHORIZED DRONE

PERMITTED

MODEL AIRCRAFT OPERATION MAY BE
HAZARDOUS - PROCEED AT OWN RISK

PLEASE CONTACT WWW.MAAC.CA FOR
ADDITIONAL INFORMATION



Airdrie Modellers Aircraft Society (AMAS)

POLICY MANUAL

BALZAC FIELD EDITION FOR RPA OPERATIONS

Introduction

This site is in controlled airspace – strict compliance with these rules is required. The following rules package is available to all AMAS RPA Pilots while operating RPAS at this site, either electronically or in print. In addition to the following club rules, the following concepts must be met by all members.

1. Each RPAS must be registered with Transport Canada with a Manufacturer Safety Assurance Declaration, either under the MAAC declaration (Model Aircraft, Rotary wing, or Hybrid) or with another established manufacturer (DJI etc.) **and** each RPAS must have the required documentation available (owners user/maintenance “manual”)
2. All RPAS pilots must have an Advanced RPAS Certificate, or be operating under the direct supervision of an Advanced RPAS Certificate holder and
3. Each **individual pilot’s RPAS flying session** must have permission from the controlling agency via NAV DRONE. There is no group permission ability to date.

Administrative Rules

1. The AMAS Balzac Field is located on the east side of McDonald Lake on Range Road 291, 550 m south of the intersection with Cross Iron Drive. The gate coordinates are: **51° 11' 50.54"N 113° 56' 08.22"W**.
2. The AMAS Balzac Field is in NAV CANADA Calgary International Airport (CYYC) Class C Control Zone designated transponder mandatory controlled airspace. CYYC airport is located 5.3NM to the southwest. The ATC frequency to monitor (optional) is "Tower East" on 118.7. MAAC members **shall not broadcast MAAC operational related matters on ATC frequencies** without explicit ATC permission – regardless of a member possessing a ROC-A or other Aviation License. See Appendix B for the CFS entry for YYC.
3. Airdrie Airpark (CEF4) is located 4.0NM to north.
4. Our site is clear of all normal aircraft traffic patterns, however you may see aircraft at high altitudes to the west.
5. The Balzac Field is open all year to AMAS members. No flying will commence until half an hour after sunrise and will end a half hour before sunset, the time of which is available on the Weather Network App. Night flying is not allowed. All combustion engines must be equipped with a muffler which meets the decibel level requirement of below 96db measured at a distance of 3 m from the aircraft.
6. All pilots and students using the Club's facilities shall be either current AMAS members in good standing, or guests of the same, and must abide by the rules set out by AMAS. Members are responsible for the conduct of their guests and must ensure that all guests meet and understand the requirements for RPAS operations.
7. All members and guest fliers must be a holder of a current MAAC membership card and undertake a field orientation before using the AMAS field facilities. International memberships are not accepted. Spectators are not allowed in the pits or pilot-stations.
8. Pilots responsible for RPAS operation must have at least the **Advanced RPAS Pilot Certificate**. Each pilot must carry his/her MAAC card and Transport Canada RPAS Pilot Certificate, as applicable, with them while flying. Pilot Certificates are not required for non-RPAS operations (mRPAS and control line). Any unqualified or unapproved person shall not fly any aircraft (including mRPAS) without being accompanied by a qualified AMAS flight instructor.
9. Pilots and Students flying RPAS categories shall be familiar with and comply with Part IX of the Canadian Aviation Regulations. All Members are responsible for respectfully advising fellow pilots of any rule infractions or best safety practices.
10. All visiting modellers shall be briefed on these club rules prior to being permitted to operate a mRPAS, RPAS or control line aircraft.
11. Animals brought to the field shall always be restrained while on AMAS premises. The bringing of any pets to the AMAS field is discouraged.
12. The last person leaving the airfield is responsible for closing and locking the clubhouse and gate.

In the event of an emergency, call 911 - the address is Range Road 291, 550 m south of the intersection with Cross Iron Drive. The gate coordinates are: 51° 11' 50.54"N 113° 56' 08.22"W.

mRPAS Specific Rules

mRPAS rules - NAV CANADA airspace

1. Per the CAR, mRPAS do not require an RPAS operators' certificate and cannot be registered with Transport Canada. mRPAS are however regulated under CAR900.06 and part VI of the CAR.
2. mRPAS operation inside controlled airspace cannot use and do not need NAV DRONE for permission.
3. Per MAAC policy, operating mRPAS inside controlled airspace is only permitted where MAAC has issued an SOC that determines CAR900.06 has been met. Airdrie meets those requirements per the below.

NOTE – The MAAC Manufacturer Declaration policy does not permit “drone” operation in controlled airspace. A “drone” is **not** defined by propulsion system (i.e., multi-rotor) but rather whether there is any type of onboard semi-autonomous flight control systems such as “return to home”. All MAAC mRPAS must be flown by the pilot – basic stability gyros or simple stability systems like SAFE are allowed. Please read MAAC policy or contact MAAC for additional information.

4. Therefore, members may operate mRPAS at this site without any RPAS pilot certification, registration or additional airspace permission provided the following conditions are met:
 - All mRPAS must be flown in direct control mode only. “Drones” are prohibited.
 - Members are responsible to ensure the RPA weight is below 250 grams ready to fly. Violations will not be tolerated.
 - There are no age restrictions on mRPAS flight.
 - mRPAS do not require a MAAC “manufacturer operations manual” or similar.
 - Visual observers are optional for mRPAS.
 - mRPAS will be operated in accordance with all site and MAAC rules such as honouring the flight line. Spotters are at member discretion.
5. NOTE - if a member has obtained NAV DRONE permission to operate an RPAS for a given day/session, they may also fly an mRPAS at any time during or outside the NAV DRONE permission time limits without any further permission.

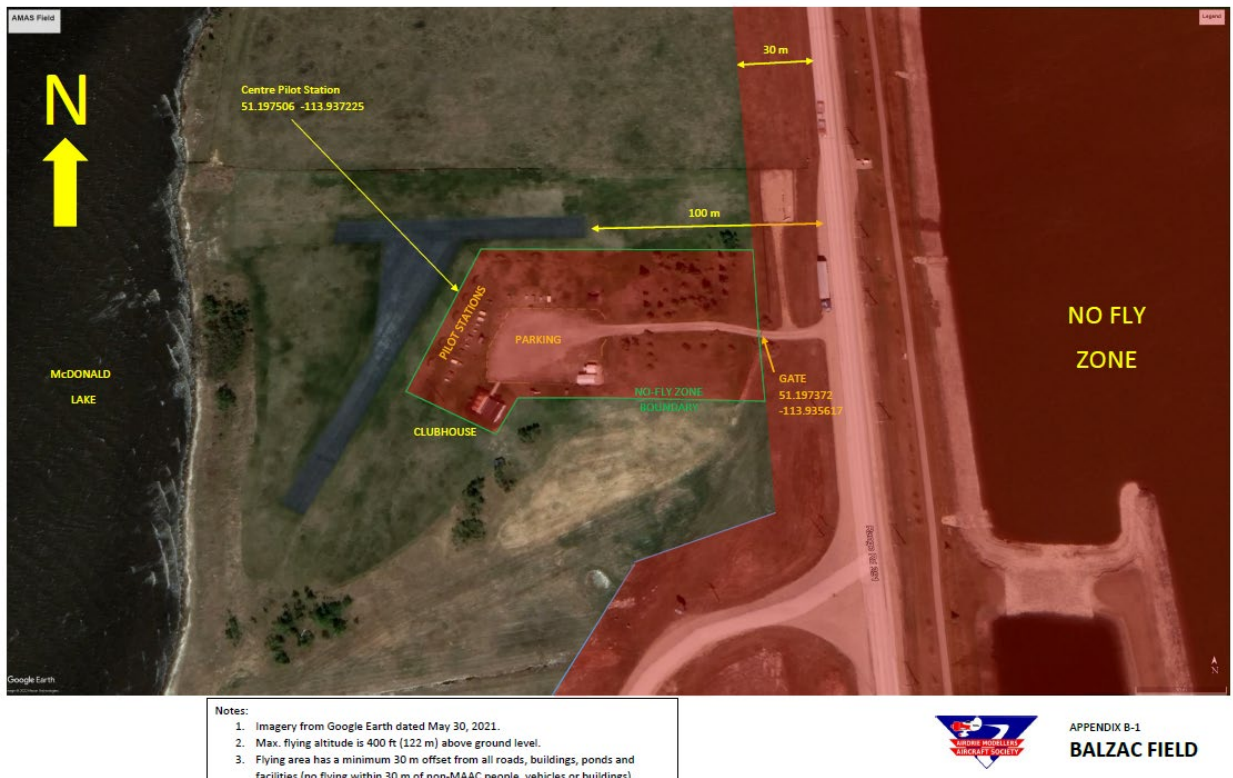
MAAC members conducting mRPAS activities shall give way or otherwise immediately get out of the way of all full-scale aircraft – no exceptions.

Normal Operating Procedures and Club Safety Rules - RPAS

1. The types of modelling activities permitted at the Balzac Field include fixed-wing and rotary wing RPAs up to 25 kg MTOW, and control line models. Gas-turbine powered models are not permitted. First Person View (FPV) flying is not permitted.
2. Any Pilot responsible for the operation of an RPAS must have a current Advanced RPAS Pilot Certification.
3. Conformance to MAAC RPAS Manufacturer Declaration is mandatory for all RPAS pilots. The MAAC RPAS Manufacturer Declaration policy items are provided in Appendix C. The registered owner (which may or may not be the same as the pilot) of each RPAS intended to be operated in controlled airspace, must register the RPAS with Transport Canada as a MAAC declared RPAS. The owner must also complete an “operators manual” per MPPD27 outlining the minimum requirements. This form along with the other listed documents must always be kept with the RPAS and available to the Pilot when operating in controlled airspace.
4. The **NAV DRONE** app shall be used by every pilot to obtain airspace access permission for each model for each day flying at the field.
 - a. Please refer to the MAAC tutorial on what values to enter in NAV DRONE for a MAAC SOC flying site.
 - b. There is no group ability or sharing of a NAV DRONE approval or similar – every pilot must submit their own individual request for each flying session.
 - c. For clarity, unless specified in the NAV DRONE approval, MAAC declared model aircraft do not require a “transponder” or any other onboard ATC identification equipment to operate in CYYC Class C transponder airspace.
 - d. Please refer to the NAV CANADA website for more information and instruction on the use of NAV DRONE.
 - e. Please direct all NAV DRONE usage questions to NAV CANADA via their feedback channels.
5. The flying altitude limit at the field is 400 ft (122 m).
6. The **RPAS Wilco** app shall be used to conduct a site survey at least once per day. A group site survey is permitted, provided the information is readily available to all RPAS pilots, including weather and NOTAM information. The site survey for the site **must be always present**, either in print or electronically.
7. Members and guests are required to limit their flying within the zones shown below and in Appendix A.

Airfield Zones





The AMAS Executive and the AMAS Safety Officer shall undertake an annual inspection of the flying area to ensure continued conformance for safety related items (no flying within 30 m of the general public, vehicles or buildings). The AMAS Executive will provide a signed copy of the inspection report to MAAC as part of the annual registration process.

8. Pilots and students shall perform a thorough pre-flight check of their equipment at the beginning of each flying day which must include a range check and confirmation that fail-safe settings are active (as per MAAC manufacturer declaration). mRPAS pilots must confirm that their models weight less than 250 g.
9. Only qualified pilots or students are permitted in the flying area (beyond the fence). Members must clearly display their AMAS-MAAC card at their flying station. The use of clearly displayed AMAS name badges is highly recommended.
10. The following start-up, take-off, landing approach, and recovery procedures are to be followed:
 - a. All models will be restrained before being armed or started in the designated start-up areas.
 - b. Hand launching shall be done in agreement with any pilots flying – normally off to one side of the pilot stations.
 - c. Pilots shall take off into the prevailing winds, or otherwise in agreement with all pilots flying. If no wind, all take-offs etc. shall be north or south but away from

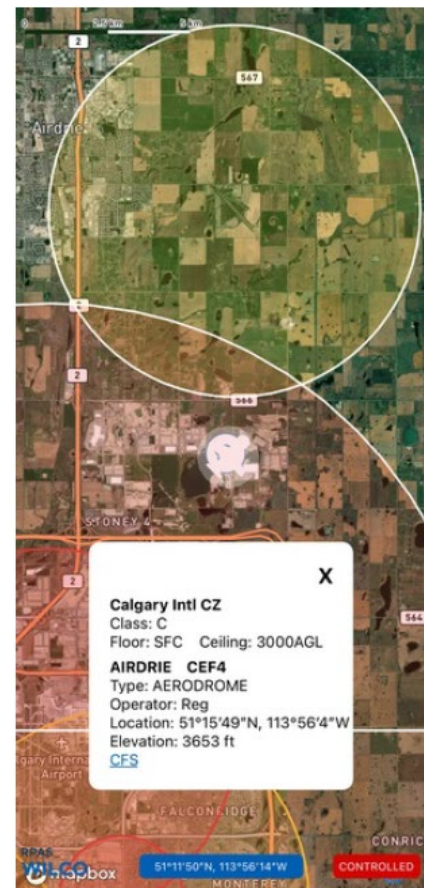
the sun. Landing aircraft have the right-of-way but it is up to the landing pilot to warn of his approach.

- d. Pilots shall call out if their aircraft malfunctions in flight and must be given landing priority. The recovery of downed models in the flying area shall not be done without the agreement of all pilots flying. Thereafter no new models may take-off until the downed model is recovered. No flying directly over the recovery crew.
 - e. No flying is permitted while runway or landscape maintenance is being conducted in the take-off/landing area.
 - f. Standing on runways is not allowed except to take off or to retrieve your aircraft.
 - g. All pilots must call out their intention to take off, land or step on the runway.
 - h. When flying, pilots must be behind the pilot station fence. Do not turn your back to the flight area, especially if you are at a pilot station. Personnel who are not piloting an aircraft should refrain from disturbing, or distracting those who are.
11. Pilots shall not fly behind the flight line or in any other designated no-fly zone. Every effort must be taken to prevent aircraft entry into no-fly zones, including intentionally grounding the model. The flying area, including any no-fly zones, is shown in Appendix A.
 12. A maximum of four (4) aircraft of any type is permitted to be flying simultaneously at any given time. Please limit your flight time to ten minutes and alternate in a courteous fashion based on the membership present. When the control line circle is being used, no other aircraft are permitted to be flown. Control line pilots must coordinate with the other pilots present to allow time for safety cones to be setup etc. Pilots may fly in formation provided they agree to do so.
 13. No flying will commence until half an hour after sunrise and will end a half hour before sunset, the time of which is available on the Weather Network App for the City of Calgary or Airdrie. Night flying is not allowed.
 14. Aviation NOTAMs for CYC shall be reviewed via the RPAS Wilco app.
 15. The club mandated minimum weather conditions for RPAS are:
 - a. no cloud is present below 1000' above the model flying area, and
 - b. a horizontal visibility requirement of 3 SM (5 km) or more around the flying area, and
 - c. no other obscuring conditions (fog, smoke, haze etc.) which could make spotting full-scale aircraft difficult.
 16. Visual observers are mandatory in controlled airspace with the following rules:
 - a. Radio monitoring of the ATC frequency is **not required** at this site.
 - b. The visual observer (or other non-flying pilot/delegate) should be assigned responsibility for ensuring "communication capability" is maintained with Air Traffic Control per the approval notice.

- c. Visual observers for operations in controlled airspace should be certified RPAS pilots (basic or advanced). A minimum of one visual observer per flight line is required.
- d. Visual observers (VO) will be briefed on this rules package before assuming the role of VO. The sole role is to scan the sky for approaching full scale aircraft – do not watch the RPA. Pay particular attention to whatever direction airplanes might come from.
- e. The visual observer should stand close to any pilots flying so they can be heard, that their view of the sky must be unobstructed, and free from the sun’s glare.
- f. When spotting a potential conflict – yell **AIRPLANE** in a clear loud voice. All pilots flying will descend as low as possible – aiming for 60’agl – and if need be, land as soon as safely able.
- g. When the VO believes, or the pilots flying observe the airplane is no longer a problem yell – **ALL CLEAR**. Flying may resume as normal.
- h. Members must not make any ambient noise generation during model operations, which could interfere with visual observer(s) aural notifications. This includes loud music, run-ups, engine tuning, loud generators near pilots or similar.

Emergency Procedures

- 17. If an incident that involves bodily harm occurs, arrange for medical attention immediately if required. First aid kit, defibrillator, phone and fire extinguisher are located in the clubhouse. If a **911** call is placed, please provide the GPS coordinates of the main gate to the EMS responders: **51° 11' 50.54"N 113° 56' 08.22"W**. If an incident occurs that results in bodily harm or property damage (not including aircraft), this must be reported to the AMAS Executive within 24 hours of the event. This information is posted on the outside of the clubhouse.
- 18. In the event of any of uncontrolled and sustained RPAS movement (fly-away or uncontrolled flight) **outside our flying area**, immediately contact YYC Air Traffic Control (**403-216-7116**) and advise them of the scenario. Also see instructions on the NAV DRONE Approval form.
- 19. NOTE – this process is **not required** for crashes or **minor** deviations immediately outside the flying area – see reporting requirements or CAR901.49.

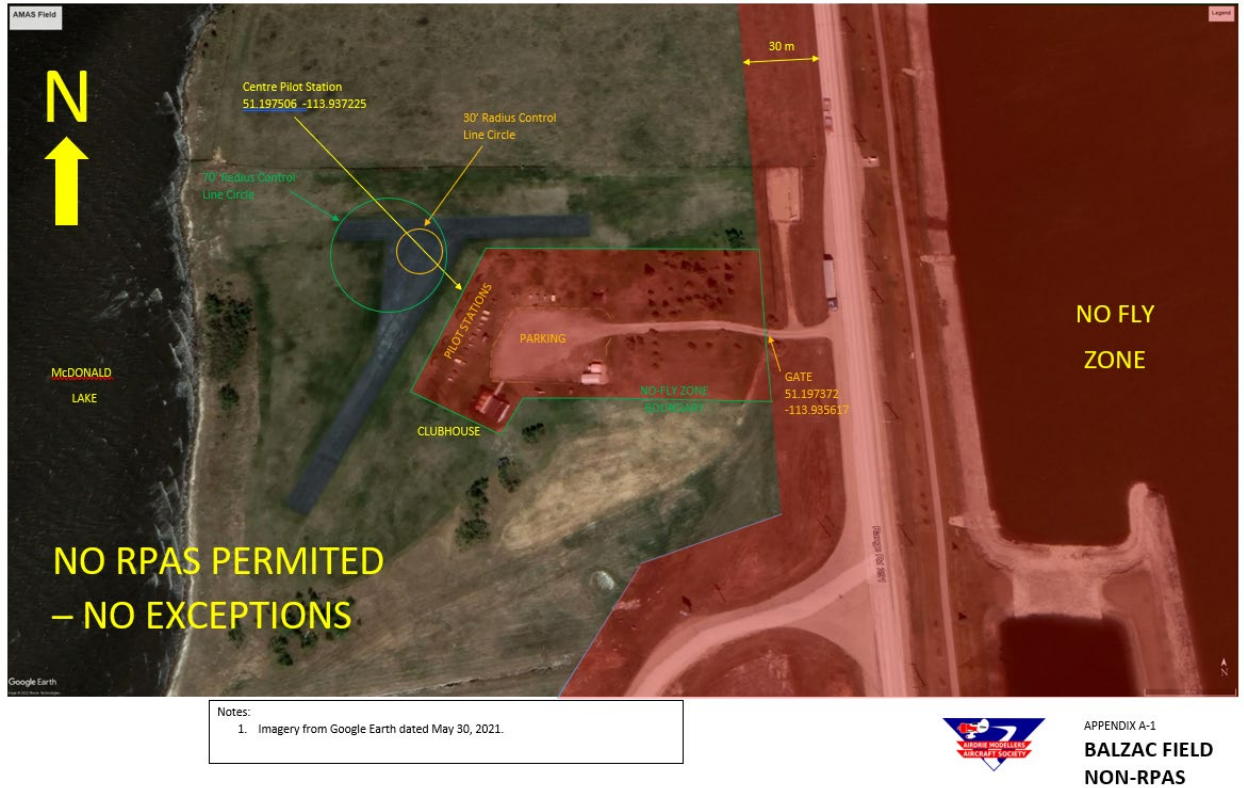


20. If there is any type of near miss or safety concern between a full-scale aircraft and our RPA, **ALL FLYING SHALL** cease immediately. The members involved should fill out a MAAC reportable occurrence report and submit that to MAAC and the Club executive and follow MAAC policy with the following exceptions:
- a. If the member(s) involved believe the risk was very minimal, they may complete their own self declaration or risk assessment using the MAAC form. Submit a copy of the form to the club executive when able and recall you must keep this form for one year (CAR901.49 (2)). Resume flying when done.
 - b. If the member or Club executive deems the event serious, flying will not resume until members are given permission by the Club executive – in writing.
 - c. If there is actual contact between an aircraft and a MAAC RPAS – all flying will cease until MAAC confirms we may resume operations.
 - d. This process is for **your** protection.
21. In the event of any normally expected modelling mishap which requires any degree of repair, the model may only be “field repaired” if all normal modelling supplies and tools are present and used in accordance with established modeling practices or manufacturer instructions.
- a. Any repair other than minor (replacing broken propeller etc.) shall be treated as a maiden flight. Ensure logbook entries are made.
 - b. Any repair that cannot be fixed at the field, shall only be repaired at the modellers/owners shop or other repair facility. Ensure logbook entries are made.

Non-RPAS procedures

22. For control line operations, orange safety cones/pylons must be set up around the outer edge of the flying circle at 3 m intervals. A control line spotter is mandatory. The following are club procedures for ensuring by-stander safety during control line operations:
- NO RPAS are permitted while control line operations are occurring – no exceptions. See attached diagram.
 - When any member or other person spots a by-stander approaching the flying area that might present a safety concern, they are to yell out “BY-STANDER” in a loud voice.
 - ALL control line pilots must immediately climb the model to as high an altitude as is possible (above head height) OR land immediately. This may require an intentional forced landing/crash away from the approaching bystander.
 - The spotter or pilot should endeavor to warn the bystander to remain clear of the flying area and outside the safety buffer distance. Yelling in a firm loud voice “STOP - stay back” and waving your arm(s) is suggested.

- If you perceive the bystander to be in danger, and do not have a reasonable expectation to ensure their safety, “ground/crash/stop” you model by any means possible away from the bystander and in a manner that is as safe as possible.



23. Site safety rules are necessary to provide an understanding of the required actions to ensure aviation safety, public safety, and to promote member safety, thus being in the best interest of members, the club, the community, and MAAC. Always refer to the latest version of these club rules. The Club Executive shall review the club rules for compliance with RPAS Regulations whenever an update or change is issued. This may result in club rule revisions as needed at any point during the year. Also the Club Executive shall conduct an annual survey of the flying area to ensure continued conformance with RPAS Regulations.

Training

1. Only those persons approved by the AMAS Training Committee shall instruct in the flying of model aircraft at the AMAS Balzac Field.
2. While instructing a student, AMAS or the approved AMAS instructor will not be responsible for any damages incurred to the student's aircraft or equipment.
3. The instructor will follow the MAAC Wings Program when instructing a student.
4. Guests learning to fly must be instructed by a qualified AMAS instructor are subject to the same rules as any other student.
5. An AMAS instructor assigned for this purpose must evaluate a new member who has previously obtained their wings at another club.

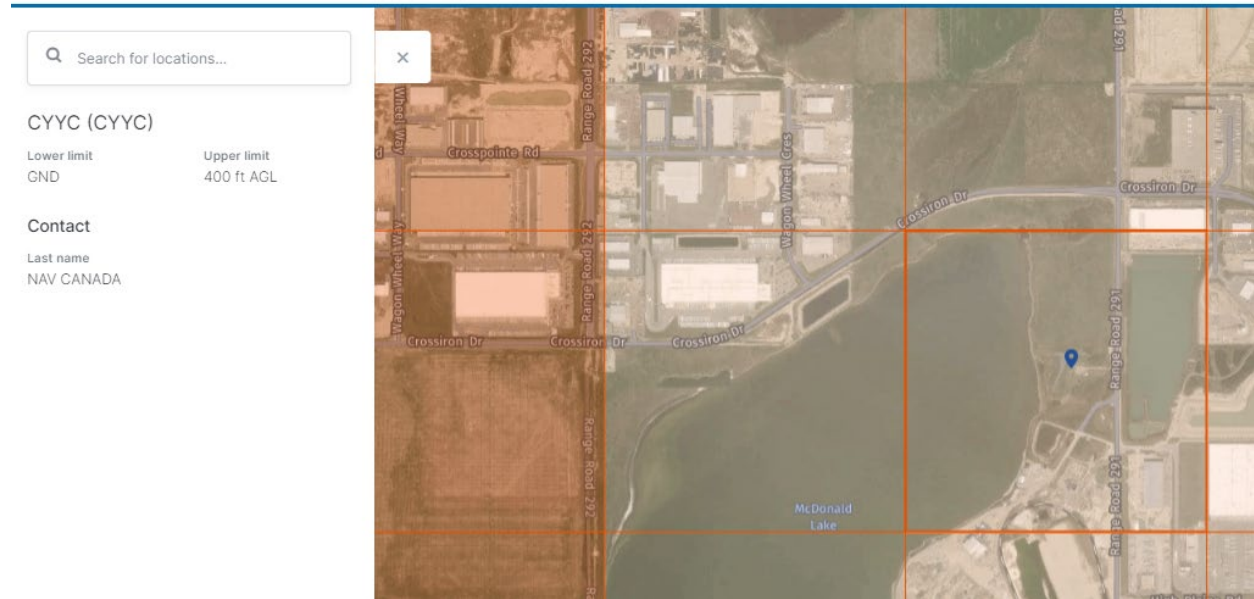
Rules Enforcement

1. If any member observes another member disobeying the rules of the AMAS, he may lay a complaint in writing within five days of the occurrence, and forward to the AMAS Executive.
2. After the complaint has been reviewed by the Rules Committee and passed their recommendation on to the Executive, the Executive will either resolve the matter, or take it to the next regular meeting for resolution by the membership.
3. Any person, or persons, charged with an offense, under, will have the right to attend the Executive meeting at which the matter is being debated, to defend themselves.
4. There will be no appeal of the Executive's decision or to the decision of the membership.

Appendix A – FIELD DIAGRAMS

The flying area is within a 400'AGL zone per NAV DRONE Viewer (Oct 2023). The darker orange area to the west is a 200'agl zone – clear of our flying area.

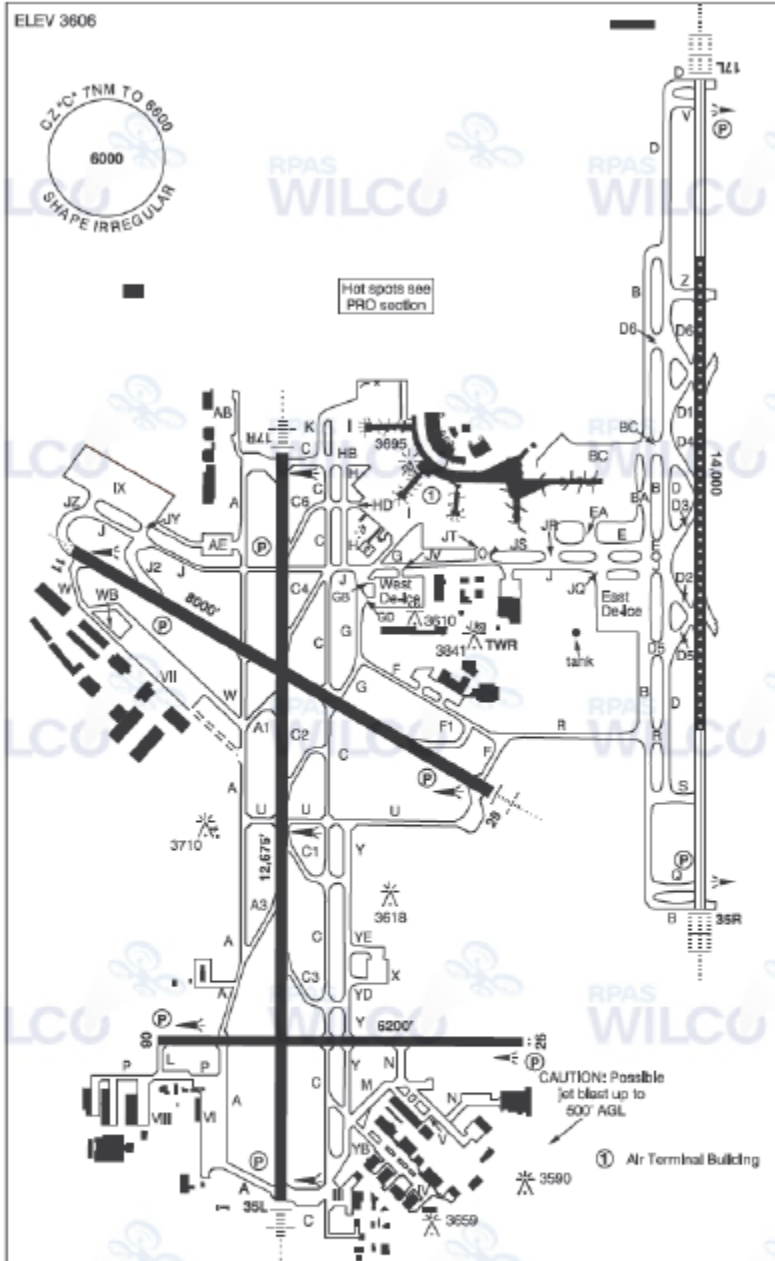
NAV NAV Drone



Appendix B – YYC CFS ENTRY

CALGARY / YYC CALGARY INTL AB

CYYC



CANADA FLIGHT SUPPLEMENT / GPH 205 Effective 09012 29 December 2022 to 00012 23 February 2023

ALBERTA

AERODROME/FACILITY DIRECTORY

CALGARY / YYC CALGARY INTL AB (Cont'd)

CYYC

REF	N51 07 21 W114 00 48 15°E (2013) UTC-7(6) Elev 3606' VTA A5005 LO2 HI3 T1 CAP OC
OPR	The Calgary Airport Authority 403-735-1300 H24 Cert Ldg fees

COMM	
RCO	Edmonton rdo 123.375 (FISE) 126.7 (bcst)
ATIS	128.225
CLNC DEL	120.825 all dep acft ctc CLNC DEL
APRON	APRON I: Apron Advisory 121.3 12-07Z± O/T bcst inten ions
GND	121.9 (West) 125.35 (East) 275.8
TWR	118.4 (West) 118.7 (East) 236.6 (E) (emerg only 403-216-7116)
ARR	123.85 (West) 125.9 (East) 126.525 127.15 294.9
DEP	119.8 (East) 124.52 (West) 255.1
VFR ADV	119.4
PAL	Edmonton Ctr 124.525 127.775 243.5

AIRDRIE AB

CEF4

REF	N51 15 50 W113 56 04 2.6SE 15°E (2012) UTC-7(6) Elev 3653' VTA A5005 LO2 HI3 T1	
OPR	Airdrie Airpark Ltd 403-466-7051 or 403-542-2141 Reg PPR	
PF	B-1 C-2,3,4,5,6	
FLT PLN		
FIC	Edmonton 866-WXBRIEF (Toll free within Canada) or 866-541-4102 (Toll free within Canada & USA)	
ACC	Edmonton IFR 868-358-7526	
SERVICES		
FUEL	100LL Self Serve 403-861-4199 or 403-585-7224 No hovering or ldg of helis allowed on twy near fuel tank or by acft tie-down areas; fuelling of helis allowed when towed to fuelling area only.	
RWY DATA	Rwy 12(123°)/30(303°) 5000x100 asphalt	
RCR	Opr Ltd win maint	
LIGHTING	12-AS(TE LO), 30-AS(TE LO) ARCAL-122.9 type J	
COMM		
ATF	UNICOM lld hrs O/T t/c 122.9 2NM 4800 ASL	
PRO	Rgt hand circuit Rwy 30 (CAR 602.96). Circuit hgt 4200 ASL or below. Arr/dep: ctc Calgary advsy 119.4 prior to entering Class "C" airspace.	
NOISE	Acft climb rwy hdg to 4200 ASL BPOC.	
CAUTION	Broken pavement on twy.	

Appendix C – MAAC RPAS MANUFACTURER DECLARATION POLICY

Please refer to the full MAAC policy for additional information. The following are the core requirements of the policy that enable MAAC operation in controlled airspace. To be eligible to be classified as meeting the “MAAC RPAS Manufacturer Declaration”, the RPAS must meet the following technical requirements:

- a) The RPA must not weigh more than 25 kg ready to fly (SFOC are not permitted),
- b) The RPA must be of a type, quality and construction or assembly method consistent with the commonly accepted definition of “model aircraft” in North America, wherein the MAAC member, using the MAAC safety code and processes, is responsible for any portion of construction or final flight ready assembly. See MAAC policy for a detailed description of the types of acceptable MAAC RPAS/model aircraft and their classifications.
- c) The control system and components must be of a type, and quality meeting Industry Canada approval and otherwise meet MAAC Safety Code and commonly accepted modeling and model industry standards for radio control installation and operation.
- d) The RPAS must not contain any type of “Human-on-the-loop” or other computer control in the control system. For clarity, deactivation, or temporary disabling of any such system is not acceptable – these types of control systems must not be present in the system.
- f) RPA operating in controlled airspace up to 400’ AGL, MAAC VLOS meets CAR922.04 requirements provided the RPAS pilot operates in accordance with MAAC VLOS.
- g) The RPA must have performance capability to descend from the maximum altitude approved by the controlling agency to 60’AGL at a rate of 700 feet per minute or greater.
- h) The RPA or RPAS must have an operable “flight termination” system or design criteria that can be reasonably expected to terminate the flight with minimal delay in the event of a control link failure.
- i) If intended to be flown at night, or if required by the controlling agency during the day, the RPA must have a functioning lighting system to ensure MAAC VLOS requirements are met or to provide enhanced visual detection for full-scale pilots.

Prior to RPAS operation under the “MAAC RPAS Manufacturer Declaration”, **the RPAS pilot shall ensure the RPAS owner** has documentation available at the site/event for each RPA which contains the following information. This may be in electronic or printed format however MAAC highly recommends this information be included in the RPA logbook, either as a separate page entry, an addendum, or as a package of info:

- a) RPA Make or manufacturer name,
- b) Model – the specific RPA model designation including the bound/used transmitter.
- c) The RPA category (MAAC Model Aircraft, MAAC Rotary Wing, MAAC Hybrid)

- d) The RPA maintenance program that includes:
 - i. instructions related to servicing and maintaining the RPA and control system,
 - ii. An inspection program to maintain system readiness.
- e) Any weight limits or center of gravity concerns or related special requirements.
- f) Any RPA design features such as limitations on speed, altitude, or operational restrictions,
- g) Any foreseeable weather conditions or limitations affecting RPAS operation,
- h) Any special or unique features of the system that could result in severe injury to crew members during operation.
- i) Any special or unique design features of the system, and the operating procedures, that are intended to protect against injury any person not involved in the operation,
- j) Any warning information provided to the pilot notifying any degraded system performance,
- k) Any special or procedures for operating in normal or emergency conditions,
- l) Any special assembly, adjustment, or post flight inspection requirements, and
- m) Any available manuals or component operating instructions.
- n) The above records shall be kept by the owner, and any subsequent MAAC owner for the life of the RPAS, or until two years after the RPAS is withdrawn from service and de-registered.

To operate a RPAS under the “MAAC RPAS Manufacturer Declaration”, the **RPAS pilot shall ensure** the following requirements are met:

- a) All other relevant sections of the CAR are met,
- b) The RPAS is operated in compliance with the MAAC Safety Code and any category specific rules or requirements.
- c) The RPAS meets the technical requirements of MAAC policy,
- e) The RPAS shall not be operated in any mode other than “direct manual control”
- f) The pilot shall not operate more than one RPAS at a time.
- g) The pilot shall not operate the RPA unless any equipped onboard flight termination system is operable,
- h) The RPA shall not be operated within 30 m of any bystander or spectator, under any circumstances and **regardless of altitude**.
- i) The pilot shall not operate an RPAS unless at least one visual observer is present Note, unless required by the controlling agency or stipulated in the site SOC, mRPAS do not require a visual observer.
- j) The RPAS shall not be operated in any weather condition, near terrain or any other condition which could:
 - i. reduce or negate visual detection of approaching full scale aircraft or bystanders,

- ii. interfere with radio control link range or clarity of reception or
 - iii. negatively affect the performance of the RPA or the control system where safety of operation could be compromised.
- k) The pilot shall only operate a RPA of a type, size or performance capability that can realistically be expected to maintain controlled flight within the lateral and vertical flying area confines specified in the SOC or by the controlling agency,
- l) The RPAS pilot shall report to MAAC without delay any defect, flaw or equipment performance issue that negatively affected meeting any of the technical or operational requirements of this policy.
- i. The RPAS **shall not be operated again** under this declaration until both MAAC and the RPAS pilot/owner have investigated and agree the noted deficiency has been rectified.
 - ii. Members shall use the MAAC Reportable Occurrence form and MAAC shall respond in writing. Any such record shall be kept for two years from the date of the agreement to cause and remedy.
 - iii. The above records shall be kept by the owner, and any subsequent MAAC owner for the life of the RPAS, or until two years after the RPAS is withdrawn from service and de-registered.