Reference your request for information regarding Unmanned Air Vehicles (UAV). The following information will answer many of your questions. Should you require further information not covered in this document, please send your inquiry to: PNRspecialflightops@tc.gc.ca

Unmanned air vehicles (UAVs) are “aircraft” under the Aeronautics Act and are governed by the Canadian Aviation Regulations (CARs). An unmanned air vehicle system is a set of configurable elements consisting of an unmanned aircraft, its associated control station(s), the required command and control (C2) links and any other elements as may be required, at any point during flight operation. UAVs are aircraft of any size that may be remotely controlled or may have an automated flight capability and they are defined in legislation as aircraft operated without a pilot on board, other than a model aircraft.

In Canada, a Special Flight Operations Certificate (SFOC) is required by section 602.41 of the CARs for the safe conduct of unmanned air vehicle (UAV) system operations. SFOCs are dealt with on a case-by-case basis and an SFOC can only be issued once a requestor demonstrates that the risks associated with the operation of the UAV will be managed to an acceptable level. It is essential that the certificate holder be aware of the responsibility to ensure that the UAV operation is conducted in such a way that the safety of persons and property on the ground and other airspace users is not jeopardized.

While model aircraft do not need a SFOC, they are limited in their operation (e.g. operated by sporting enthusiasts for recreational purposes and personal enjoyment, not for monetary gain or any other form of hire and reward). Recreational use of aircraft does not include use of aircraft where there is any payment, consideration, gratuity or benefit, directly or indirectly charged, demanded, received or collected by any person for such use. Associations, like the Model Aeronautics Association of Canada (MAAC), exist for the benefit of recreational remote control model aircraft enthusiasts. MAAC has actively participated in Transport Canada UAV Regulatory Development Working Groups for several years and is interested in preserving the ability for modellers to fly recreationally. MAAC insurance does not cover the commercial use of model aircraft.

You may wish to review the following Canadian Aviation Regulations:

- Section 602.41 of the CARs states that no person shall operate an unmanned air vehicle in flight except in accordance with Special Flight Operations Certificate (SFOC).

- Section 623.65(d) of the CARs outlines information that should be submitted on a special flight operations certificate application.
(623.65(d) Unmanned Air Vehicle
(amended 2003/12/01; previous version)
(1) The following standards apply to the application for and the operation of an unmanned aeroplane, rotorcraft or airship pursuant to CAR 602.41.
(2) An application for a Special Flight Operations Certificate for the purpose of conducting the flight of an unmanned aircraft other than an unmanned free balloon or a model aircraft shall be received by the appropriate Regional Transport Canada General Aviation Office, at least 20 working days prior to the date of the proposed operation or by a date mutually agreed upon between the applicant and Transport Canada.
(3) The following constitutes an application for a Special Flight Operations Certificate for the purpose of operations in paragraph (1) above:
(a) the name, address, and where applicable, the telephone number and facsimile number of the applicant;
(b) the name, address, and where applicable the telephone number and facsimile number of the person designated by the applicant to have operational control over the operation (Operation Manager);
(c) method by which the Operation Manager may be contacted directly during operation;
(d) the type and purpose of the operation;
(e) the dates, alternate dates and times of the proposed operation;
(f) a complete description, including all pertinent flight data on the aircraft to be flown;
(g) the security plan for the area(s) of operation and security plan for the area(s) to be overflown to ensure no hazard is created to persons or property on the surface;
(h) the emergency contingency plan to deal with any disaster resulting from the operation;
(i) the name, address, telephone and facsimile numbers of the person designated to be responsible for supervision of the operation area (Ground Supervisor), if different from the Operation Manager during the operation;
(j) a detailed plan describing how the operation shall be carried out. The plan shall include a clear, legible presentation of the area to be used during the operation. The presentation may be in the form of a scale diagram, aerial photograph or large scale topographical chart and must include at least the following information:
(i) the altitudes and routes to be used on the approach and departure to and from the area where the operation will be carried out;
(ii) the location and height above ground of all obstacles in the approach and departure path to the areas where the operation will be carried out;
(iii) the exact boundaries of the area where the actual operation will be carried out;
(iv) the altitudes and routes to be used while carrying out the operation;
(k) any other information pertinent to the safe conduct of the operation requested by the Minister.

- Section 603.66 of the CARs prohibits the flight operation of an unmanned air vehicle unless the provisions of a special flight operations certificate are complied with.
- Section 603.67 states the requirement for an application to be submitted in the form and manner required by the Special Flight Operations Standards. It also states that once the application is received and the applicant demonstrates the ability to conduct
the flight operation in accordance with the Special Flight Operations Standards, the Minister shall issue the special flight operations certificate. 


All aircraft operating in Canada require liability insurance. The aircraft owner has to subscribe for liability insurance covering risks of public liability. Amounts of coverage are based on the UAV maximum permissible take-off weight. Please refer to CAR 606.02, found at:


· The minimum is generally $100,000, but each operator should review the Regulations.

If the UAV is equipped with a laser, then a Notice of Proposal to Conduct Outdoor Laser Operations(s) will need to be submitted to Transport Canada – which will then be forwarded to Health Canada for an assessment.

http://www.tc.gc.ca/wwwdocs/Forms/26-0754_0910-01_BO.pdf

Also, on Transport Canada’s website there is a document entitled: "Staff Instructions for the Review and Processing of an Application for a Special Flight Operations Certificate for the Operation of an Unmanned Air Vehicle" which may be found at:

http://www.tc.gc.ca/eng/civilaviation/opssys/managementservices-referencecentre-documents-600-623-001-972.htm. This document is intended for use by Transport Canada Inspectors, but it is also available to applicants so that they have a better understanding of what is expected when they make application to operate their UAV. It also gives a sample of the conditions that are put into an operating certificate.

In terms of radio licences and radio operator certificates, Industry Canada is the lead department for radio, spectrum and telecommunications issues. Radio Communication Regulations may be found at: http://laws-lois.justice.gc.ca/eng/regulations/SOR-96-484/index.html

· As a pilot, you will have a Radio Operator Certificate, but depending on the frequencies used for the command and control of the aircraft, and on the type of radio used for communications, you may need to contact Industry Canada.

The bottom line is that the UAV operator must be able to demonstrate that they are adequately equipped to safely operate the UAV in the desired environment. Applications for SFOCs are dealt with on a case-by-case basis. An individual assessment of the associated risks is conducted for each operation before a certificate can be issued. Operating conditions will vary depending on aircraft performance capabilities, mission requirements, operating environment and complexity of the operation. Certificate holders are responsible for ensuring that the operation is conducted in such a way that the safety of persons and property on the ground and other airspace users is not jeopardized, assuming the same operational and safety responsibilities as the owner of
a manned aircraft.

The UAV operator is also responsible for coordination with the air traffic control agency (e.g. NAV CANADA) responsible for supplying air traffic services for the airspace affected by the operation. Validity of the SFOC would be contingent upon the Certificate holder coordinating with the airspace service provider. Depending on the environment the UAVs are operated in, there may be additional operating conditions in the SFOC with respect to advising airport authorities, complying with air traffic control agency instructions, maintaining radio contact between the UAV operations personnel and the air traffic control agency, ensuring that other airspace users are advised of the UAV activities etc.

In terms of making application, there is no SFOC application form (and there is no fee for an SFOC). Instead, you will need to use the Staff Instruction guidance material to guide you in making the application. When operators are ready to make application, they need to contact their Regional Transport Canada Office. The regulatory standard states that applications must be received at least 20 working days prior to the date of the proposed operation, and this date assumes that the application is complete, however, at present, Transport Canada Regional offices are receiving an ever increasing number of requests, many applications are taking considerably longer to process. A normal progression for low level aerial photography operations would be for an application for flight testing and pilot training, several site specific applications (while you develop an operations manual that would outline how you propose to complete site surveys and security planning), followed by an SFOC that would provide for operations without our prior approval, provided it was within the parameters of the certificates conditions.

Unmanned aircraft are legitimate airspace users, however, they need to integrate into national airspace in a safe manner and routine UAV access to the national airspace system poses a variety of technological, regulatory, workload, and coordination challenges.

Below are some standard conditions that are placed on a typical SFOC. We have found it beneficial to provide applicants with these standard conditions during the development of their applications. To help expedite the processing of your application, please ensure that it is in an unlocked PDF or Word format, so that the inspector reviewing your file is able to attach electronic notes.

Please ensure that your application provides detailed explanations or procedures that will be followed to comply with each of the conditions.

1. Application Date
2. Applicant’s full name
3. Company name (if applicable)
4. UAV make and model as well as full technical and performance specifications to allow the inspector to assess the safety of the UAV for the requested operation. All the information must be included in the application, no hyperlinks.

5. Requested start and end dates for the SFOC

6. Location requested:
   a. If requesting a blanket, specify for which provinces within PNR area.
   b. If requesting a specific site, include the latitude and longitude of each of the corners of a polygon encompassing the proposed operations area for the UAV. If it is more convenient, feel free to attach KML or KMZ files to the application for the operation area.

7. For any of the UAV’s operated under the authority of the SFOC, the company shall have subscribed for liability insurance covering risks of public liability in the amount described in subsection 606.02(8) of the Canadian Aviation Regulations. Please indicate whether this is in fact the case

8. The UAV must remain within the pilot operator’s unaided visual line of sight and clear of cloud during flight operations. Additionally, the pilot operator’s responsibilities shall not include ancillary duties which in any way detract from maintaining visual contact with the UAV. Payload manipulation and control shall not be the responsibility of the pilot operator. Explain in detail the role/duties of the pilot to reflect this.

9. The Certificate holder shall maintain an adequate management organization that is capable of exercising supervision and operational control over persons participating in the UAV operations. Detail who is the operation manager and their specific role/duties.

10. The Certificate holder shall locate an observer in the area. This observer must maintain a visual lookout for anything encroaching on the operating area or airspace and advise the UAV operator immediately if such a situation occurs or if the UAV is violating any conditions of this SFOC. Please detail the particular role of the observer(s) in your operation.

11. The Certificate holder shall ensure that sufficient site security resources and personnel are in place to ensure that the security of the UAV operations area is not compromised. In the event of a suspected or confirmed compromise of site security, the UAV flight shall be terminated immediately. A compromise of the operation area is considered to be an encroachment upon any of the following limitations:
   a. The Certificate holder shall ensure that the UAV is operated at a distance of not less than XXX feet horizontally from inhabited structures such as buildings and vehicles without the owner’s consent.
b. Flight within XXX feet horizontally of public roads is prohibited unless sufficient site security measures have been taken to prevent incursion of occupied vehicles within XXX feet horizontally of the UAV.

c. Flight over or within XXX feet horizontally of persons not directly involved in the flight operation of the UAV is prohibited.

d. Flight of the UAV over publicly owned property is prohibited without the owner’s (City, Town or Municipality) written consent. This includes but is not limited to public sidewalks, boulevards, alleyways, roads and rights of way.

12. It is essential that the applicant explain in detail how the security of the site as outlined above will be accomplished. To simply say that a site security plan will be in place is not acceptable. The applicant must provide details as to how this will be accomplished effectively. The horizontal distances from people, buildings and vehicles will vary depending on the inspector’s assessment of the safety buffer required. The XXX distances typically vary between 100-300 feet horizontally. The Certificate holder shall conduct the operation of the UAV in a manner that does not pose a hazard to aviation or public safety. Provide further details as required.

13. Only one (1) UAV shall be operated in-flight by an operator at any one time.

14. The UAV shall only be operated during daylight hours. The UAV shall only be operated when visibility in the area of operation is not less than 3 statute miles and the cloud base is not less than 1000 feet AGL.

Your application should indicate that this is in fact the case.

15. In the event of any emergency, loss of control or suspected malfunction of the UAV, the flight shall be terminated immediately until the situation is rectified. Additionally, The Certificate holder shall have immediately available an Emergency Procedures Checklist for the operator to follow if the UAV runs away, including the applicable Nav Canada Area Control Centre Shift Manager (Edmonton 780-890-8397 Winnipeg 204-983-8338 or Montreal 514-633-3365(if in the vicinity of Iqaluit)) and the local airport Control Tower or Flight Service Station phone numbers. The applicant must provide a detailed plan and an actual copy of the emergency procedure checklist to be followed. It should take the form of who does what and when.

16. The Operator shall have a valid Canadian Flight Supplement and Aeronautical Charts for the flight areas to determine classes of airspace, airport locations and services. Please indicate whether this is in fact the case.
17. If flights are to occur within the Oil Sands Area the following conditions will apply;

   a. A Notice to Airman (NOTAM) must be filed with the applicable Flight Information Center (FIC) unless advised otherwise by Nav Canada; and

   b. The Certificate holder must hold an Aeronautical Radio Operators Licence, a Station License (if required by Industry Canada) and equipment appropriate to monitor the Air Traffic Advisory Frequency (ATF) of 123.5 at all times during the operation.

Please detail how this will be accomplished if applicable.

18. For flights within 40 nm of Portage La Prairie – Southport Airport, the following conditions apply;

   a. No flights within the CYPG control zone;

   b. The Certificate holder must hold an Aeronautical Radio Operators License, a Station License (if required by Industry Canada) and equipment appropriate to monitor 126.7 at all times during the operation; and

   c. Any flights within 40nm of Southport Airport shall notify Allied Wings Flight Operations via email at least 4 hrs prior to flight. Email address is fltops@alliedwings.ca : Include company name, contact name and telephone number, time of flight, area of operation (latitude, longitude) and maximum altitude planned.

Please detail how this will be accomplished if applicable.

19. Flight over Department of National Defence (DND) property or within DND controlled airspace is prohibited.

20. If the operation of the UAV will occur within 1 nm of DND property or DND controlled airspace, the Certificate holder shall advise DND 1 Canadian Air Division (1CAD)/SSO UAV of the intended time of the operation, specific location and other pertinent details at least two business days in advance.

21. Flights of the UAV within the control zones of Moosejaw Airport (CYMJ), Cold Lake Airport (CYOD) and Portage La Prairie/Southport Airport (CYPG) are prohibited.

22. Flights of the UAV within Class A, B and F airspace are prohibited, unless the applicant has made arrangements with the controlling agency to ensure aviation safety. Detail these arrangements.
23. For flights of the **UAV** within Class C and Class D control zones the following conditions apply:

   a. Restricted to a maximum altitude of 100 feet AGL;

   b. Flight within 1 nm of any runway or helipad is prohibited;

   c. The Control Tower must be notified in advance and have no objections;

   d. The Certificate holder shall comply with all restrictions and conditions imposed by Air Traffic Control;

   e. A Notice to Airmen (NOTAM) must be filed with the applicable Flight Information Centre (FIC), unless Nav Canada advises otherwise;

   f. Prior to each flight, the Certificate holder shall contact the applicable Control Tower and obtain a clearance to operate;

   g. Cellular phone, satellite phone or radio contact must be available with the applicable Tower during the UAV operation; and

   h. After each flight, the Certificate holder shall contact the applicable Control Tower and advise that the operation is terminated.

Please detail how this will be accomplished if applicable.

24. For flights of the **UAV** within 5 nm of any MF or ATF aerodrome, the following conditions apply:

   a. Restricted to a maximum altitude of 100 feet AGL;

   b. Flight within 1 nm of any runway or helipad is prohibited;

   c. The aerodrome operator must be notified and have no objections;

   d. The Certificate holder shall comply with all restrictions and conditions imposed by the aerodrome operator;

   e. A Notice to Airmen (NOTAM) must be filed with the applicable Flight Information Centre (FIC), unless Nav Canada advises otherwise; and

   f. If the aerodrome;

      i. Has a Mandatory Frequency (MF) the Nav Canada Flight Service Station (FSS) or Area Control Centre responsible for the airport
shall be advised prior to each flight and all instructions complied with.

ii. Has a Mandatory Frequency (MF) without a ground based station the UAV operator must comply with the mandatory radio communication requirements of Canadian Aviation Regulation (CAR) 602.98 up to and including 602.103 as applicable.

iii. Has an Aerodrome Traffic Frequency (ATF) the Nav Canada Flight Information Centre (FIC) responsible for the airport shall be advised prior to each flight.

g. Cellular phone, satellite phone or radio contact must be available with the applicable Tower/Terminal or Area Control Centre as applicable during the UAV operation.

Please detail how this will be accomplished if applicable.

25. For flights of the **UAV** within Class G Airspace the following conditions apply;

   a. Nav Canada Flight Information Centre (FIC) responsible for the nearest airport shall be advised prior to each flight, unless advised otherwise by Nav Canada.

   b. A Notice to Airman (NOTAM) must be filed with the applicable Flight Information Center (FIC) for operations above 300 feet AGL unless advised otherwise by Nav Canada.

   c. Cellular phone, satellite phone or radio contact must be available with the applicable FIC during the UAV operation.

Please detail how this will be accomplished if applicable.

26. For flights of the **UAV** within 1 nm of any privately owned, uncontrolled runway or helipad, the following conditions apply:

   a. Restricted to a maximum altitude of 100 feet AGL;

   b. The aerodrome operator and users must be notified and have no objections; and

   c. The Certificate holder shall comply with all restrictions and conditions imposed by the aerodrome operator.

Please detail how this will be accomplished if applicable.
27. All persons involved with these operations (flight crew, ground station crew, and observer(s)) shall be familiar with the contents of this SFOC, the application dated and the supporting documentation. Please outline your briefing procedures to be used to ensure that this requirement is met.

28. The Certificate holder shall:

   a. Document their flight planning and procedures for each location and flight.

   b. Document a post flight report on performance and any deviations from the plan.

   c. Keep all documentation including written consents where applicable, and make available for inspection for 2 calendar years.

Please note that our mailbox has a limit of 5mb. For applications containing multiple proposed locations, it is desirable to send kml or kmd files from Google earth as they take up considerably less space than screen shots. Please note that our server will reject all kmz files.

UAV SFOC applications for the Prairie and Northern Region are to be submitted to: PNRspecialflightops@tc.gc.ca

To provide feedback to TCCA, use CAIRS. See: http://www.tc.gc.ca/CivilAviation/ManagementServices/QA/cairs.htm

Pour tout commentaire à TCAC, utiliser CAIRS. Voyez: http://www.tc.gc.ca/AviationCivile/ServicesdeGestion/AQ/ssgac.htm