Advisory Circular

Subject:	Guidance Material for Operating Unmanned Air Vehicle Systems under an Exemption		
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1.0 INTRODUCTION

1.1 Purpose

(1) An Advisory Circular (AC) provides information and guidance with regard to a specific issue or regulation. In this case, it provides general guidance, safety practices and explanatory information for operators of unmanned air vehicle (UAV) systems operating under an exemption to Sections 602.41 and 603.66 of the *Canadian Aviation Regulations* (CARs) from the requirement to hold a Special Flight Operations Certificate (SFOC).

1.2 Terminology

(1) While different terms may be used to describe aircraft that are operated without the pilot onboard, the term used in Transport Canada regulations is the term unmanned air vehicle or UAV.

1.3 Applicability

(1) This document and the associated UAV exemptions apply to those who operate a UAV where:

a) it has a maximum take-off weight of 1 kilogram (2.2pounds) or less; or

b) it has a maximum take-off weight exceeding 1 kilogram (2.2 pounds) up to and including, 25 kilograms (55 pounds).

(2) If you are not eligible, or choose not to operate under exemptions listed above, you must apply for a Special Flight Operations Certificate (SFOC) if:

a) you plan to operate a UAV for any purpose; or

b) you want to operate a model aircraft that weighs more than 35 kilograms (77 pounds).

1.4 Description of Changes

(1) This AC provides additional guidance material based on the new UAV exemptions issued in December 2016, specific information for each exemption (versus combining the two exemptions as outlined in the original AC) and more in-depth information for each exemption condition.

2.0 REFERENCES AND LEGAL REQUIREMENTS

2.1 Reference Documents

(1) Although this AC provides information and guidance regarding the two (2) UAV exemptions issued by Transport Canada, UAV operators are reminded that in order to operate under the exemptions they must read, understand, and possess a copy of the actual exemption document while operating. The exemptions can be found on the Transport Canada UAV Webpage.

(2) The aviation laws that govern the use of UAV systems in Canadian airspace are the:

(a) *Aeronautics Act;* and

(b) *Canadian Aviation Regulations.*

(3) In addition, it is your responsibility to know the other Canadian laws that apply to your operation such as the:

(a) Canadian Transportation Accident Investigation and Safety Board Act;

(b) Charter of Rights and Freedoms,

(c) Criminal Code of Canada;

(d) Customs Act;

(e) Environmental Protection Act;

(f) National Parks Aircraft Access Regulations;

(g) Personal Information Protection and Electronic Document Act;

(h) Privacy Act;

(i) Radiocommunication Act;

(j) Transportation of Dangerous Goods Act; and

(k) Trespass Act.

2.2 Cancelled Documents

(1) The publication of a new issue of the AC on "Guidance Material for Operating Unmanned Air Vehicle Systems under an Exemption" renders this document null and void.

2.3 Definitions

(1) The following **definitions** are used in this document and are only applicable to UAV operations conducted under these exemptions:

Built-up area – means areas with groups of buildings or dwellings including anything from small hamlets to major cities. Anything larger than a farmstead is considered a built-up area.

Command and Control Link – means the data link between the UAV and the control station for the purposes of managing the flight.

Control Station – means the facilities and/or equipment remote from the UAV from which the aircraft is controlled and/or monitored.

First Person View (FPV) Device – means a device that generates and transmits a streaming video image to a control station display or monitor giving the pilot who is viewing this video, the illusion of actually flying the UAV from an onboard pilot's perspective.

Flight Termination System - means the system that, upon initiation, terminates the flight of a UAV in a manner so as not to cause significant damage to property or severe injury to persons on the ground.

Fly-away - means an interruption or loss of the command and control link where the pilot is unable to affect control of the UAV and the aircraft is longer following its preprogrammed procedures resulting in the UAV not operating in a predictable or planned manner.

Lost Link - means the loss of command and control link contact with the UAV such that the pilot can no longer manage the aircraft's flight.

Maximum Take-off Weight – means the weight of the aircraft at the time of the operation, including the weight of any payload (e.g. a camera) and fuel.

Model Aircraft – means an aircraft with a total weight not exceeding 35 kg (77 lbs.) that is mechanically driven or launched into flight for recreational purposes and that is not designed to carry persons or other living creatures.

Special Flight Operations Certificate – is a Canadian aviation document required for operating an unmanned air vehicle system.

Unmanned Air Vehicle – means a power-driven aircraft, other than a model aircraft, that is designed to fly without a human operator onboard.

Note: Unmanned air vehicles exclude fireworks, kites, rockets and large unoccupied free balloons.

UAV Operator - means the person that has possession of the UAV system, as owner, lessee or otherwise.

Visual line-of-sight (VLOS) - means unaided (corrective lenses and/or sunglasses exempted) visual contact with the UAV sufficient to be able to maintain operational control of the aircraft, know its location, and be able to scan the airspace in which it is operating to decisively see and avoid other air traffic or objects.

Visual Observer - means a trained crew member who keeps the UAV within visual line-of-sight and who assists the pilot in the duties associated with collision avoidance and complying with the applicable rules of flight.

3.0 BACKGROUND

(1) Greater numbers of people in Canada are flying aircraft that, by design, are flown without a pilot onboard and are remotely controlled through an external control station such as a remote control, computer, tablet, smart phone, etc.

(2) While UAV systems are legitimate airspace users, they must integrate into Canada's national airspace system in a safe manner to ensure the safety of other airspace users and people and property on the ground.

(3) The exemptions and this AC were written with the underlying assumption that the UAV will be kept within visual line-of-sight of the pilot at all times. If it is determined, by the UAV operator or pilot, that additional visual observes are required to address safety concerns/issues, it must be understood that the aircraft must remain within visual line-of-sight of the pilot.

4.0 EXEMPTION REQUIREMENTS FOR UAVS 1KG OR LESS

(1) The mandatory safety conditions required to operate under the Exemption for UAVs 1kg or less can be found in Appendix A. You must observe and comply with all the conditions included in the exemption in order to use the exemption as your authority to operate a UAV. If not, you could be are subject to penalties/fines.

(2) In order for UAV operators to understand the meaning/purpose of the various exemption conditions, the following additional guidance and explanatory materials are provided.

(3) When the term "**Any person**" is used in the condition, it could signify the operator, pilot or other crew associated with the operation. When the term "**pilot**" is used, the UAV pilot is specifically responsible for conducting that task or for complying with the condition.

4.1 General Conditions

(1) Any person conducting operations under this exemption shall conduct a safe operation and shall not pose a risk to aviation safety.

> **Note:** This principle is the basis for all flight operations. Understanding and complying with the conditions contained in the applicable exemption under which you are operating will enhance your ability to conduct a safe operation.

(2) Any person operating under this exemption shall not operate a UAV system in such a reckless or negligent manner so as to endanger or be likely to endanger the life or property of any person.

> **Note:** The same principle as the condition above but is applicable to persons and property on the ground. Operating in a reckless or negligent manner can result in fine of $5,000 for individuals or $25,000 for corporations.

(3) Any person operating under this exemption shall be a minimum of 18 years of age, or be at least 16 years of age and conducting research under the supervision of an academic institution.

> **Note:** This condition is consistent with the CARs which requires pilots to be 18 years of age in order to conduct commercial aviation operations. A certain level of maturity is required to make business decisions that will not adversely affect aviation safety. A provision has been added that reduces the age to 16 for academic activities. The reduction to 16 years of age assumes that there will be adult supervision of these activities.

(4) Any person conducting operations under this exemption shall subscribe for liability insurance covering risks of public liability at the levels described in subsection 606.02 (8) of the *Canadian Aviation Regulations* and in any case shall have no less than $100,000 in liability insurance coverage pertaining to the operation of the UAV system.

> **Note:** Section 606.02 of the CARs sets out liability insurance requirements for all aviation activities. It should be noted that most general, home or business liability insurance policies do not cover aviation related activities. UAV operators must ensure that they possess insurance that covers third party liability for aviation related activities prior to operating under this exemption.

(5) The pilot operating under this exemption shall not operate the controls of a UAV if they have any reason to believe that they are suffering or are likely to suffer from fatigue, or suffering from any other condition which would render them unfit to perform their duties.

> **Note:** This condition addresses risk posed by fatigue or any other situation that may impair the UAV pilot's ability to safely operate the UAV or make safety based decisions.

(6) The pilot operating under this exemption shall not operate a UAV system within eight (8) hours after consuming an alcoholic beverage or while under the influence of alcohol or while using any drug that impairs the person faculties to the extent that the safety of the operation is endangered in any way.

> **Note:** A UAV pilot operating a UAV system while impaired or in a state where their ability to make sound safety decisions is compromised, could lead to drastic consequences. As such, it is imperative that no one operate a UAV while their judgment is impaired. Impairment from drugs could include illicit drugs or prescription and over the counter medication.

(7) Any person conducting operations under this exemption shall be familiar with the relevant aeronautical information that is appropriate to the intended flight, before commencing a flight.

> **Note:** Sections 602.71 and 602.72 of the CARs require pilots to obtain and review all the appropriate information that is relevant for the proposed flight, prior to take-off. This

requirement is also applicable for UAV operations to ensure that the information required to safely conduct the flight is obtained prior to flight. Aeronautical products such as aeronautical maps and the Canada Flight Supplement can be found at: http://www.navcanada.ca/EN/products-and-services/Pages/flight-planning.aspx Weather and NOTAM (notice to airmen) information can be found at: https://flightplanning.navcanada.ca/cgi-bin/CreePage.pl?Langue=anglais&NoSession=&Page=Fore-obs/notam&TypeDoc=html

(8) Any person operating under this exemption shall not operate a UAV in any special aviation event requiring an SFOC under Part VI, Subpart 3, Division 1 of the CARs.

Note: Participation in an air show is considered a higher risk activity for UAVs. As such participation in air shows is prohibited under the exemption. Should a UAV operator wish to participate in an air show or conduct product/capability demonstration activities they would be required to obtain an SFOC.

(9) Any person conducting operations under this exemption shall obtain permission from the owner(s) of the property on which a UAV intends to take-off/launch from and/or land/recover on.

Note: Operators/pilots must be aware of the need to observe the regulation imposed by the Trespass Act when conducting take-offs and landings of their UAV. Although operations **over** private land may be legally permitted as aeronautical operations under the Aeronautics Act, taking off from or landing on private property, positioning of the operator on private property or retrieving a UAV that may have strayed onto private property, will require property owner's permission.

(10) Any person conducting operations under this exemption shall, prior to commencing operations, perform a site survey to assess the suitability of each location and confirm that safe operations can be conducted.

Note: Pilots will be responsible for conducting an assessment of the suitability of each site, prior to conducting operations, to ensure such operations can be conducted safely. Typical elements that should be assessed would include, but are not limited to:

- Defining the boundaries of the area where the actual operation will be carried out;
- Class of airspace and specific provisions of the airspace (e.g. ensure it is uncontrolled airspace) and take note of proximity to controlled airspace and restricted airspace, such as restrictions around nuclear facilities or military bases;
- Altitudes and routes to be used on the approach and departure to and from the area where the operation will be carried out;
- Other aircraft operations (e.g. proximity of aerodromes including heliports and seaplane bases, or other operating sites);
- Hazards associated with nearby industrial sites;
- Areas of high-intensity radio transmissions or electromagnetic interference (e.g. radar sites);
- Limitations and/or restrictions of local by-laws;
- Location and height of obstacles (e.g. wires, masts, buildings, cell phone towers, wind turbines, etc.);
- Built-up areas, major roadways and recreational activity sites;
- Security provisions to limit public access;

- Predominant weather conditions for the site and proposed operating areas; and
- Minimum separation distances from persons, vehicles and structures.

(11) Any person conducting operations under this exemption shall cease operations if at any time the safety of other airspace users or persons or property on the ground is in jeopardy, or if the person conducting operations is unable to comply with the conditions of this exemption.

> **Note:** It is expected that anytime the operation is deemed to be a risk to other airspace users or people and property on the ground, the operation will need to cease until such time as the issues that were causing the unsafe conditions are addressed/remedied. Flight operations should not resume until the issues are resolved.

(12) A copy of the following documents shall be accessible to any person conducting operations under this exemption.

(a) The exemption;

(b) Proof of liability insurance coverage;

(c) Name, address and telephone number of the UAV operator;

(d) A copy of the UAV system operating limitations; and

(e) Evidence that the training required in condition 40 has been completed.

> **Note:** In order to provide Transport Canada Inspectors and police authorities the ability to fulfill their duties to ensure aviation/public safety, the UAV pilot/operator is required to have immediate access to the above noted documentation at the location where the UAV is being controlled from. It is expected that a hard copy of the exemption is on site.

(13) A person conducting operations under this exemption shall immediately produce any of the documents and/or information listed in condition 12 above to a peace officer, police officer, or Transport Canada inspector upon request.

> **Note:** This condition simply provides clarification to the pilot/operator that Transport Canada Inspectors or peace/police officers have authority to request documentation be provided so that they can verify that operations are being conducted legally.

(14) No person operating under this exemption is relieved from complying with the provisions of any other relevant Acts, Regulations or laws or from any level of government.

> **Note:** This condition reinforces the idea that there are numerous other Acts and regulations that may apply when conducting UAV operations, such as the Criminal Code of Canada, Privacy Act, Personal Information Protection and Electronic Documents Act, National Parks Aircraft Access Regulations and the Transportation Accident Investigation and Safety Board Act, to name but a few. UAV operators/pilots must ensure that they abide by applicable rules, regulations, laws and bylaws from municipal, city, provincial and national authorities.

4.2 Flight Conditions

(15) The pilot operating under this exemption shall maintain continuous unaided visual contact with the UAV sufficient to be able to maintain operational control of the UAV, know its location and be able to scan the airspace in which it is operating to decisively see and avoid other air traffic or objects.

> **Note:** The exemption limits operations to within visual line-of-sight. This means that the pilot must keep the UAV within eyesight at all times. Vision enhancing devices such as binoculars, night visual goggles, powered vision magnifying devices and goggles designed to provide a first person view are not considered “unaided visual contact”, and

are therefore prohibited under this exemptions. In determining the range that will ensure the UAV can be seen, consideration must be given to the pilot's capabilities, the meteorological conditions, the size and conspicuity of the UAV and any other relevant factors. In any case, the range cannot be further than ¼ mile away from the pilot as specified in condition No. 16 below.

(16) The pilot operating under this exemption shall not operate the UAV further than one-quarter (¼) nautical mile from the location from which the pilot is operating the UAV.

Note: The pilot must always maintain visual line-of-sight at all times and must not fly the UAV further than ¼ nautical mile from their location. On any given day, the distance at which the aircraft is considered to be within visual line-of-sight (VLOS) away from the pilot will vary and it may actually be less than ¼ mile, therefore, the lesser of the VLOS or ¼ nautical mile distance must not be exceeded.

(17) The pilot operating under this exemption shall not use a first person view device.

Note: First person view (FPV) devices generate and transmit a streaming video image to a ground station display or monitor giving the pilot who is viewing this video, the illusion of actually flying the aircraft from an onboard pilot's perspective. These often come in the form of FPV goggles. FPV devices do not provide an adequate capability to ensure safe traffic separation and compliance with right of way requirements. An inadequate field of regard, the lack of depth perception and the inability for these systems to operate in a lost link situation all detract from the ability of FPV devices from being an adequate or substitute for visual observation of the aircraft while it is being flown. UAV payloads used for the conduct of filming or videography would not be considered FPV devices.

(18) The pilot operating under this exemption shall only operate a UAV from a single control station and control relays or visual observers to extend the operational area are prohibited.

Note: Due to the additional communications and coordination requirements, extended range operations using visual observers introduce a higher risk to other airspace users and people and property on the ground. As such the operator would be required to apply for an SFOC in order to determine the additional safety conditions required to mitigate the associated increased risks.

(19) The pilot shall operate no more than one UAV at any one time.

Note: No research has been conducted to determine the increased risk of a single operator controlling more than one UAV in either normal or emergency situations. The ability to, visually observe the UAV and deconflict from other air traffic would be greatly reduced where more than one UAV is operated, thereby increasing the risk to other airspace users and requiring a specific review of the operation through the application for an SFOC.

(20) The pilot operating a UAV shall give way to manned aircraft at all times.

Note: Given the small size and lack of visual conspicuity of the UAVs to be operated under this exemption, and the likelihood that the pilots of manned aircraft would be unable to see the UAV, it is the UAV pilot's responsibility to always give way to all other aircraft. This would include all manned aircraft (i.e. aeroplanes, helicopters, gliders, ultra-lights, hot air balloons, etc). It is expected that the UAV pilot would immediately land the UAV anytime a manned aircraft entered or came in close proximity to the area in which the UAV is operating.

(21) The pilot operating under this exemption shall only operate a UAV during daylight hours.

Note: Allowing aircraft to be flown outside daylight hours requires specified procedures and aircraft lighting and results in a more complex operation. Where UAVs are

equipped with lights, the ability of the pilot to control the UAV at night using only the onboard lights is extremely difficult, and as such, there could be a need for additional ground lighting/illumination conditions to mitigate the risks of night operations. To operate a UAV at night, an SFOC would be required.

(22) The pilot operating under this exemption shall operate a UAV at or below 300 feet above ground level (AGL).

Note: 300 feet AGL corresponds to the altitude at which obstacles are required to be lit and marked in accordance with the CARs. Operators of manned aircraft understand that below these altitudes, additional objects are present that may be difficult to see. It must be understood that at all times it is the UAV pilot's responsibility to avoid other aircraft. It is up to the UAV pilot/operators to ensure they have an effective method for ensuring they do not operate above 300 feet, such as a barometric altimeter or GNSS based altitude system. Comparing the altitude of the UAV to surrounding buildings or structure could also be effective, provided that the exact height of those objects is known.

(23) The pilot conducting operations under this exemption shall only operate a UAV in Class G airspace.

Note: As these UAVs are not required to meet any mandatory communication, navigation, surveillance/air traffic management (CNS/ATM) equipment requirements, operations are limited to uncontrolled airspace (Class G). This equates to airspace in which no air traffic control service is provided to pilots. Additionally, operations under this exemption are restricted from transponder airspace, restricted airspace, control zones, controlled airspace and areas with higher volumes of manned aviation where UAV operations pose a greater risk to other airspace users. For these types of operations an SFOC would be required. There are seven classes of airspace in Canada, each designated by a letter (A through G) and they are detailed below. The class of airspace can be determined through several sources including the Canada Flight Supplement, the Aeronautical Information Manual (AIM) (TP14371E) http://www.tc.gc.ca/publications/en/tp14371/pdf/hr/tp14371e.pdf and various VFR and IFR maps/charts. A variety of online "airspace viewers" are also available. However, these viewers may use data that is unreliable, invalid or out-of-date and as such this data must be cross-checked with official sources such as aeronautical charts or the designated airspace handbook. Any official airspace viewer would use data from approved NAV CANADA or Transport Canada sources.

In general terms only,

- Class A airspace is controlled airspace and exists exclusively between flight level 180 and flight level 600 (this equates to approximately 18,000 ft to 60,000 ft above sea level (ASL)).
- Class B airspace is any controlled airspace between 12,500 ft ASL up to 18,000 ft ASL. Occasionally, Class B airspace exists in other locations (control zones and associated terminal control areas), although this is unusual.
- Class C airspace is controlled airspace and includes control zones (CZ) around large airports. These areas usually have a 7-10 nautical mile radius up to a height of 3,000 ft above aerodrome elevation (AAE).
- Class D airspace is controlled airspace and may include areas around smaller aerodromes that have a five (5) nautical mile radius and a height of 3,000 ft AAE. Aerodromes with less busy airspace may have only a three (3) nautical mile radius control zone.
- Class E airspace is controlled airspace used for low-level flight routes and for aerodromes that need controlled airspace but do not meet the requirements for Classes

A, B, C or D. Air Traffic Control (ATC) is available for aircraft operating under instrument flight rules only.

- Class F airspace is special use airspace. For entry into restricted Class F airspace, specific permission is required from the controlling authority or user agency.
  - **Note:** You may refer to the Designated Airspace Handbook (TP1820E) for specific dimensions and further information on Class F areas. http://www.navcanada.ca/EN/products-and-services/Documents/DAH_Current_EN.pdf.
- Glass G airspace. Any airspace that is not designated, as described above, is classified as Class G airspace. Glass G airspace is uncontrolled airspace, however, it is still regulated airspace.

(24) The pilot operating under this exemption shall not operate a UAV within or over a forest fire area, or over any area that is located within five (5) nautical miles of a forest fire area or in any airspace that is described in a NOTAM issued pursuant to section 601.16 of the *Canadian Aviation Regulations*.

Note: Operations in forest fire areas are extremely high risk with many types of aircraft operating at very low level. Introducing UAVs into this airspace would add an unacceptable level of risk to manned aircraft operations. Forest fire areas are restricted pursuant to section 601.16 of the CARs through the NOTAM system and UAV pilots are expected to review applicable NOTAMs as part of their pre-flight planning. As forest fires are unpredictable, a restriction of five (5) miles nautical miles is included from the fire area for all aircraft, including UAVs.

(25) The pilot operating under this exemption shall not operate a UAV in airspace that has been restricted by the Minister under Section 5.1 of the Aeronautics Act.

Note: Under the *Aeronautics Act*, section 5.1, the Minister may prohibit or restrict the operation of any aircraft on or over any area or within any airspace, either absolutely or subject to any exceptions or conditions. This type of restricted airspace is implemented where a prohibition or restriction is necessary for aviation safety or security or the protection of the public. Examples of such airspace restrictions could include security operations such as a G8/G20 Conference, major sporting events (e.g. an Olympic event), or an active police situation. NOTAMs are issued whenever a 5.1 airspace restriction is issued. Prior to the flight, UAV pilots would be expected to ensure there are no airspace restrictions in place for the area in which they plan on operating.

(26) The pilot operating under this exemption shall only operate a UAV at least five (5) nautical miles away from the centre of any aerodrome listed in the Canada Flight Supplement or the Water Aerodrome Supplement, excluding heliports.

Note: As the knowledge, experience and skill levels of the UAV pilots operating under these exemptions may not meet manned aviation standards and the aircraft are not required to meet any mandatory communications, navigation, surveillance/air traffic management (CNS/ATM) equipment requirements, operations are not permitted within five (5) nautical miles of an aerodrome excluding heliports. As these UAVs cannot integrate into the flow of air traffic arriving and departing at an aerodrome, UAV operations pose an increased risk to other airspace users in the aerodrome environment. As such, an SFOC would be required to operate in these areas. Airports, heliports, helipads and seaplane bases are all considered aerodromes. There are several tools that can be used to identify where aerodromes are located, including aviation maps, the Canada Flight Supplement (CFS), the Water Aerodrome Supplement (WAS) and potentially some on-line tools (provided they are kept up to date). Any airspace viewer not using valid and current NAV CANADA or Transport Canada data must be

cross checked with official information. Although some UAV systems have "geofencing" functions provided onboard, it must be understood that it remains the pilot's responsibility to ensure the aircraft is only operated in appropriate areas. As none of these systems meet any certification or reliability standards, use of "geofencing" technology must be supplemented by other means to ensure safety and compliance.

For some controlled aerodromes, the control zone extends beyond five (5) nautical miles from the centre of the aerodrome, as is the case with Canada's major controlled airports. Therefore the larger of the two distances would apply as the minimum distance from the centre of the aerodrome.

(27) The pilot operating under this exemption shall only operate a UAV at least three (3) nautical miles away from the centre of any heliport listed in the Canada Flight Supplement or Water Aerodrome Supplement or any aerodrome not listed in the Canada Flight Supplement or Water Aerodrome Supplement.

Note: There are hundreds of private aerodromes in Canada where the operator has chosen not to register the aerodrome in the CFS or WAS. Pilots are expected to conduct a ground or map survey of the area in which the UAV is intended to be flown, to ensure that there are no aerodromes closer than three (3) nautical miles away from the intended operation. This three (3) nautical mile distance applies to heliports, which are listed in the CFS/WAS. Also note that some rivers and lakes not listed in the WAS are frequently used as landing and take-off areas during spring, summer, and fall, and would fall under the definition of an operating water aerodrome during these periods.

(28) The pilot operating under this exemption shall not operate a UAV in any control zone.

Note: This condition is self-explanatory since all operations can only be conducted in uncontrolled Class G airspace, however, it serves to emphasize the fact that at no time shall the UAV be flown in a control zone**.**

(29) The pilot operating under this exemption shall not operate a UAV over or within a built-up area.

Note: UAVs operated under these exemptions are not required to meet any technical airworthiness standards meaning that there is no assurance of the reliability, airworthiness or capabilities of the UAV system. This increases the risks to persons and property on the ground, therefore, UAVs operated under the exemption must not be operated over or within built-up areas. Built-up areas are considered areas with groups of buildings or dwellings including anything from small hamlets to major cities. For the purpose of this exemption, anything larger than a farmstead is considered a built-up area. Additionally, open or green space areas, such as a parks, parking lots or recreational areas, within a city or town are areas contained within built-up areas and are considered prohibited areas within the context of the exemption. Pilots wishing to operate within a built-up area are required to apply for an SFOC.

(30) While complying with condition 29 above, the pilot operating under this exemption shall operate a UAV at a lateral distance of at least 100 feet from any building, structure, vehicle, vessel, animal or person unless:

(a) The building, structure, vehicle, vessel or animal is the subject of the aerial work; and

(b) Only persons inherent to the operation are present.

Note: This condition provides protection to person or property on the ground that are not part of the operation or have not accepted the risk of the UAV operating in their close proximity. It permits the use of the UAV closer than 100 feet from people or objects provided those people or objects are the specific reason for the operation and have accepted the risk associated with the operation (i.e. actors on a movie set, a vehicle used in a TV commercial, aerial inspection of buildings/structures, etc.).

However, this would not include activities such as filming people at an outdoor concert or sporting event.

(31) The pilot operating under this exemption shall operate a UAV at a lateral distance of at least 100 feet from the general public, spectators, bystanders or any person not associated with the operation.

Note: For numerous reasons, the potential hazard of UAVs being flown near or over the general public and large crowds of people is significant. A security plan must be developed and adhered to in order to protect those people not involved with the UAV operation and to ensure that people do not interfere with the operation of the UAV.

(32) The pilot operating under this exemption shall not operate a UAV over or within an open-air assembly of persons.

Note: Similar to the previous condition, this provides protection to persons on the ground. For numerous reasons, the potential hazard of UAVs being flown near or over the general public and large crowds of people is significant. A security plan must be developed and adhered to in order to protect people and to ensure that people do not interfere with the operation of the UAV.

(33) The pilot conducting operations under this exemption shall only operate a UAV under visual meteorological conditions, clear of cloud with not less than two (2) statute miles ground visibility.

Note: These weather limits are those required in Class G airspace for manned aircraft. The required visibility permits the UAV pilot to view, not only the UAV, but the surrounding airspace to ensure manned aircraft can be seen in sufficient time for the UAV pilot to take any required actions to avoid collision. Additionally, it allows the UAV pilot the opportunity to ensure that operations are kept clear of hazardous areas. The required weather forecasts and reports are accessible from several sources including the NAV CANADA flight planning website http://www.navcanada.ca/EN/products-and-services/Pages/flight-planning.aspx

(34) The pilot conducting operations under this exemption shall be able to take immediate active control of a UAV at all times.

Note: Although the use of UAV automation is acceptable, autonomous systems which do not allow the pilot to intervene with the management of the flight are not permitted due to the potential unpredictability of their flight profile. The pilot of a UAV must be able to override the pre-programmed systems at any time, should there be a technical or safety issue with the UAV that requires pilot intervention.

(35) The pilot conducting operations under this exemption shall establish and follow normal, lost link and emergency procedures, including those established by the manufacturer.

Note: UAV pilots must have procedures that will address all normal operations of the UAV as well as abnormal and emergency situations. Failure to do so would impose hazards to both persons and property on the ground and other airspace users. Should the manufacturer stipulate procedures for specific occurrences, those procedures shall be followed unless they would result in an increased risk to other airspace users or people and property on the ground. Such procedures would generally be contained in standard operating procedures or checklists.

(36) Any person conducting operations under this exemption shall confirm that no unacceptable radio frequency interference to the UAV system is present prior to flight, nor is likely to be present during flight.

Note: Radio interference could come from many sources including high voltage power lines, transmission antennas and areas with large numbers of Wi-Fi transmitters or around radar dishes/antennas. Radio interference may render the UAV uncontrollable. As such, the UAV pilot/operator is responsible for confirming that no unacceptable radio interference to the UAV system exists prior to the operation of the aircraft.

(37) The pilot operating under this exemption shall not operate a UAV system unless it is operated in accordance with the operating limitations specified by the manufacturer.

Note: The pilot is responsible for operating the UAV in accordance with any specifications, directions or instructions provided by the manufacturer and for ensuring that any operating limitations relating to the operation of the UAV are adhered to.

(38) The pilot operating under this exemption shall not conduct a take-off/launch of a UAV if explosive, corrosive, flammable, bio-hazard or bright light emitting (laser) payloads, are carried onboard.

Note: The carriage of such payloads increases the risks associated with the operations. As such, if operational requirements require the UAV to carry such hazardous payloads, the operator would be required to apply for an SFOC. This would allow the associated risks to be assessed and the appropriate conditions imposed to ensure safe operations. Additionally, if there is intent to use a laser onboard the UAV, there are specific requirements in the CARs with regard to requesting permission to use a laser from an aircraft. It should also be understood, that Lithium Ion and Lithium Polymer batteries are considered dangerous good. As such, should the UAV need to be shipped to another location, the operator would be required to comply with the Transportation of Dangerous Goods Act and various CARs applicable to transporting dangerous goods.

(39) Any person conducting operations under this exemption shall ensure that the appropriate air traffic service unit(s) is advised immediately anytime the flight of a UAV inadvertently enters into controlled airspace.

Note: A UAV entering controlled airspace, without coordination/permission could present a significant risk to manned aviation. Should a fly-away occur that would result in the UAV entering controlled airspace, the UAV pilot/operator must immediately contact the applicable Air Traffic Control (ATC) or Flight Service Station facility in order to ensure that ATC can take appropriate actions and that the safety of other airspace users is addressed. The boundaries of controlled airspace can be found on various aeronautical aviation products (i.e. Canada Flight Supplement, visual navigation charts, terminal area charts, etc.). Where a pilot has not previously coordinated flight activities with the local air traffic service unit they should contact the NAV CANADA National Operations Centre at 613-563-5626 and provide the details of the situation (e.g. type of UAV, last known altitude, direction it was flying, remaining flight time, etc.).

4.3 Pilot Training Conditions

(40) The pilot conducting operations under this exemption shall have the appropriate knowledge, training on the UAV system and qualifications for the area and type of operation, as referred to in Transport Canada Advisory Circular 600-004:

Note: It is essential that the pilot of a UAV become knowledgeable in order to conduct safe flight operations. Pilots will need to understand airspace classification and structure, be familiar with meteorological and NOTAM reporting services, interpretation of aeronautical charts and the CFS/WAS as well as applicable content of the CARs. Pilot knowledge training could be provided by an existing flight training facility (manned or unmanned), an online course, a self-administered training program, or some combination of these options. Training facilities and online courses should provide

certificates or letters of completion. For self-administered training, it is essential to document the knowledge items covered, the time spent on each item, the references used, and the date of completion of all items. The CARs and the Aeronautical Information Manual (AIM) are also excellent sources of information to enhance one's understanding of aviation related activities. Pilots may also wish to refer to the document entitled, "Knowledge requirements for Pilots operating Unmanned Air Vehicle Systems (UAV) 25 Kg or less, Operating within visual line-of-sight" (TP15263E) http://www.tc.gc.ca/eng/civilaviation/publications/page-6557.html

Pilots must also have received sufficient practical training in the operation of the aircraft to operate safely. In many cases, manufacturers provide such training. Unmanned Systems Canada may also be a useful resource in finding possible training programs in your area. Evidence of completion of practical training should take the form of a signed and dated letter or certificate from the training provider.

4.4 Reporting Conditions

(41) Any person operating under this exemption shall, prior to the commencement of operations, notify the Minister, in writing, of:

(a) Their name, address, telephone number and e-mail;

(b) The model of UAV(s) being operated including serial number(s), where appropriate;

(c) The type of work being conducted;

(d) The geographic boundaries or area(s) where the operation will be conducted; and

(e) Confirmation that:

(i) the exemption has been read and understood;

(ii) flights will only be conducted in Class G airspace;

(iii) flights will only be conducted at the applicable distance from the centre of any aerodrome as specified in conditions 26 and 27; and

(iv) flights will only be conducted at the applicable distance from built-up areas specified in Condition 29 of this exemption.

Note: This information allows Transport Canada the opportunity to assess the effectiveness of its regulatory activities and be provided with basic information on who is operating in various areas so that they can be contacted, should there be need to do so (e.g. recovery of a lost UAV).

When referring to the geographic boundaries/location, the use of latitude and longitude is the preferred unit of measure.

Such notification will need to be e-mailed to TC.UAVExemptionNotification-NotificationExemptionUAV.TC@tc.gc.ca. An Exemption Notification form can also be accessed through the Transport Canada UAV website.

(42) Any person operating under this exception shall notify the Minister within 10 working days of any change to the information provided in the above condition or upon the permanent cessation of UAV system operations.

Note: In order to ensure that the information above remains current and valid there is a requirement to notify the Minister of any changes to the original notification provided under condition 41 above. Operators should use the same email address provided above.

4.5 UAV System Condition

(43) Any person conducting operations under this exemption shall ensure that a UAV system is in a fit and safe state for flight prior to take-off/launch.

> **Note**: No aircraft, including UAVs, should be taken airborne if the aircraft is not in a condition to sustain safe flight. This would require pre-flight inspections and checks to ensure, among other things, that the UAV is not damaged, there is sufficient fuel/battery charge to last for the planned flight (with a reasonable reserve) and confirmation that the radio link is working properly.

5.0 EXEMPTION REQUIREMENTS FOR UAVS GREATER THAN 1KG UP TO AND INCLUDING 25KGS

(1) The mandatory safety conditions required to operate under the above 1kg up to and including 25kgs exemption can be found in Appendix B. You must observe and comply with all the conditions included in the exemption in order to use the exemption as your authority to operate a UAV. If not you could be subject to penalties/fines.

(2) In order for UAV operators to understand the meaning/purpose of the various exemption conditions, the following additional guidance and explanatory materials are provided.

(3) When the term "**Any person**" is used, it signifies that anyone associated with the operation may conduct the particular task or comply with the condition. When the term "**pilot**" is used, the UAV pilot is specifically responsible for conducting that task or for complying with the condition.

5.1 General Conditions

(1) Any person conducting operations under this exemption shall conduct a safe operation and shall not pose a risk to aviation safety.

> **Note:** This principle is the basis for all flight operations. Understanding and complying with the conditions contained in the applicable exemption under which you are operating will enhance your ability to conduct a safe operation.

(2) Any person operating under this exemption shall not operate a UAV system in such a reckless or negligent manner so as to endanger or be likely to endanger the life or property of any person.

> **Note:** The same principle as the condition above but is applicable to persons and property on the ground. Operating in a reckless or negligent manner can result in fine of $5,000 for individuals or $25,000 for corporations.

(3) Any person operating under this exemption shall be a minimum of 18 years of age, or be at least 16 years of age and conducting research under the supervision of an academic institution.

> **Note:** This condition is consistent with the CARs which requires pilots to be 18 years of age in order to conduct commercial aviation operations. A certain level of maturity is required to make business decisions that will not adversely affect aviation safety. A provision has been added that reduces the age to 16 for academic activities. The reduction to 16 years of age assumes that there will be adult supervision of these activities.

(4) Any person conducting operations under this exemption shall subscribe for liability insurance covering risks of public liability at the levels described in subsection 606.02 (8) of the Canadian Aviation Regulations and in any case shall have no less than $100,000 in liability insurance coverage pertaining to the operation of the UAV system.

> **Note:** Section 606.02 of the CARs sets out liability insurance requirements for all aviation activities. It should be noted that most general, home or business liability

insurance policies do not cover aviation related activities. UAV operators must ensure that they possess insurance that covers third party liability for aviation related activities prior to operating under this exemption.

(5) The pilot operating under this exemption shall not operate the controls of a UAV if they have any reason to believe that they are suffering or are likely to suffer from fatigue, or suffering from any other condition which would render them unfit to perform their duties.

Note: This condition addresses risk posed by fatigue or any other situation that may impair the UAV pilot's ability to safely operate the UAV or make safety based decisions.

(6) The pilot operating under this exemption shall not operate a UAV system within eight (8) hours after consuming an alcoholic beverage or while under the influence of alcohol or while using any drug that impairs the person faculties to the extent that the safety of the operation is endangered in any way.

Note: A UAV pilot operating a UAV system while impaired or in a state where their ability to make sound safety decisions is compromised, could lead to drastic consequences. As such, it is imperative that no one operate a UAV while their judgment is impaired. Impairment from drugs could include illicit drugs or prescription and over the counter medication.

(7) Any person conducting operations under this exemption shall be familiar with the relevant aeronautical information that is appropriate to the intended flight, before commencing a flight.

Note: Sections 602.71 and 602.72 of the CARs require pilots to obtain and review all the appropriate information that is relevant for the proposed flight, prior to take-off. This requirement is also applicable UAV operations to ensure that the information required to safely conduct the flight is obtained prior to flight. Aeronautical products such as aeronautical maps and the Canada Flight Supplement can be found at: http://www.navcanada.ca/EN/products-and-services/Pages/flight-planning.aspx Weather and NOTAM (notice to airmen) information can be found at: https://flightplanning.navcanada.ca/cgi-bin/CreePage.pl?Langue=anglais&NoSession=&Page=Fore-obs/notam&TypeDoc=html

(8) Any person operating under this exemption shall not operate a UAV in any special aviation event requiring an SFOC under Part VI, Subpart 3, Division 1 of the CARs.

Note: Participation in an air show is considered a higher risk activity for UAVs. As such participation in air shows is prohibited under the exemptions. Should a UAV operator wish to participate in an air show or conduct product/capability demonstration activities they would be required to obtain an SFOC.

(9) Any person conducting operations under this exemption shall obtain permission from the owner(s) of the property on which a UAV intends to take-off/launch from and/or land/recover on.

Note: Operators/pilots must be aware of the need to observe the regulation imposed by the Trespass Act when conducting take-offs and landings of their UAV. Although operations **over** private land may be legally permitted as aeronautical operations under the Aeronautics Act, taking off from or landing on private property, positioning of the operator on private property or retrieving a UAV that may have strayed onto private property, will require property owner's permission.

(10) Any person conducting operations under this exemption shall, prior to commencing operations, perform a site survey to assess the suitability of each location and confirm that safe operations can be conducted.

Note: Pilots will be responsible for conducting an assessment of the suitability of each site, prior to conducting operations, to ensure such operations can be conducted safely. Typical elements that should be assessed would include, but are not limited to:

- Defining the boundaries of the area where the actual operation will be carried out;
- Class of airspace and specific provisions of the airspace (e.g. ensure it is uncontrolled airspace) and take note of proximity to controlled airspace and restricted airspace, such as restrictions around nuclear facilities or military bases;
- Altitudes and routes to be used on the approach and departure to and from the area where the operation will be carried out;
- Other aircraft operations (e.g. proximity of aerodromes including heliports and seaplane bases, or other operating sites);
- Hazards associated with nearby industrial sites;
- Areas of high-intensity radio transmissions or electromagnetic interference (e.g. radar sites);
- Limitations and/or restrictions of local by-laws;
- Location and height of obstacles (e.g. wires, masts, buildings, cell phone towers, wind turbines, etc.);
- Built-up areas, major roadways and recreational activity sites;
- Security provisions to limit public access;
- Predominant weather conditions for the site and proposed operating areas; and
- Minimum separation distances from persons, vehicles and structures.

(11) Any person conducting operations under this exemption shall cease operations if at any time the safety of other airspace users or persons or property on the ground is in jeopardy, or if the person conducting operations is unable to comply with the conditions of this exemption.

Note: It is expected that anytime the operation is deemed to be a risk to other airspace users or people and property on the ground, the operation will need to cease until such time as the issues that were causing the unsafe conditions are addressed/remedied. Flight operations should not resume until the issues are resolved.

(12) A copy of the following documents shall be accessible to any person conducting operations under this exemption.

(a) The exemption;

(b) Proof of liability insurance coverage;

(c) Name, address and telephone number of the UAV operator;

(d) A copy of the UAV system operating limitations; and

(e) Evidence that the training required in condition 50 has been completed.

Note: In order to provide Transport Canada Inspectors and police authorities the ability to fulfill their duties to ensure aviation/public safety, the UAV pilot/operator is required to have immediate access to the above noted documentation at the location where the UAV is being controlled from. It is expected that a hard copy of the exemption is on site.

(13) A person conducting operations under this exemption shall immediately produce any of the documents and/or information listed in condition 12 above to a peace officer, police officer, or Transport Canada inspector upon request.

> **Note:** This condition simply provides clarification to the pilot/operator that Transport Canada Inspectors or peace/police officers have authority to request documentation be provided so that they can verify that operations are being conducted legally.

(14) No person operating under this exemption is relieved from complying with the provisions of any other relevant Acts, Regulations or laws or from any level of government.

> **Note:** This condition reinforces the idea that there are numerous other Acts and regulations that may apply when conducting UAV operations, such as the Criminal Code of Canada, Privacy Act, Personal Information Protection and Electronic Documents Act, National Parks Aircraft Access Regulations and the Transportation Accident Investigation and Safety Board Act, to name but a few. UAV operators/pilots must ensure that they abide by applicable rules, regulations, laws and bylaws from municipal, city, provincial and national authorities.

5.2 Flight Conditions

(15) The pilot operating under this exemption shall maintain continuous unaided visual contact with the UAV sufficient to be able to maintain operational control of the UAV, know its location and be able to scan the airspace in which it is operating to decisively see and avoid other air traffic or objects.

> **Note:** The exemption~~s~~ limits operations to within visual line-of-sight. This means that the pilot must keep the UAV within eyesight at all times. Vision enhancing devices such as binoculars, night visual goggles, powered vision magnifying devices and goggles designed to provide a first person view are not considered "unaided visual contact", and are therefore prohibited under this exemption. In determining the range that will ensure the UAV can be seen, consideration must be given to the pilot's capabilities, the meteorological conditions, the size and conspicuity of the UAV and any other relevant factors. In any case, the range cannot be further than ½ nautical mile away from the pilot as specified in condition No. 16 below.

(16) The pilot operating under this exemption shall not operate the UAV further than one-half (½) nautical mile from the location from which the pilot is operating the UAV.

> **Note:** The pilot must always maintain visual line-of-sight at all times and must not fly the UAV further than ½ nautical mile from their location. On any given day, the distance at which the aircraft is considered to be within visual line-of-sight (VLOS) way from the pilot will vary and it may actually be less than ½ mile, therefore, the lesser of the VLOS or ½ nautical mile distance must not be exceeded.

(17) The pilot operating under this exemption shall not use a first person view device.

> **Note:** First person view (FPV) devices generate and transmit a streaming video image to a ground station display or monitor giving the pilot who is viewing this video, the illusion of actually flying the aircraft from an onboard pilot's perspective. These often come in the form of FPV goggles. FPV devices do not provide an adequate capability to ensure safe traffic separation and compliance with right of way requirements. An inadequate field of regard, the lack of depth perception and the inability for these systems to operate in a lost link situation all detract from the ability of FPV devices from being an adequate or substitute for visual observation of the aircraft while it is being flown. UAV payloads used for the conduct of filming or videography would not be considered FPV devices.

(18) The pilot operating under this exemption shall only operate a UAV from a single control station and control relays or visual observers to extend the operational area are prohibited.

Note: Due to the additional communications and coordination requirements, extended range operations using visual observers introduce a higher risk to other airspace users and people and property on the ground. As such the operator would be required to apply for an SFOC in order to determine the additional safety conditions required to mitigate the associated increased risks.

(19) The pilot shall operate no more than one UAV at any one time.

Note: No research has been conducted to determine the increased risk of a single operator controlling more than one UAV in either normal or emergency situations. The ability to conduct the sense and avoid function, visually observe the UAV and deconflict from other air traffic would be greatly reduced where more than one UAV is operated, thereby increasing the risk to other airspace users and requiring a specific review of the operation through the application for an SFOC.

(20) The pilot operating a UAV shall give way to manned aircraft at all times.

Note: Given the small size and lack of visual conspicuity of the UAVs to be operated under this exemption, and the likelihood that the pilots of manned aircraft would be unable to see the UAV, it is the UAV pilot's responsibility to always give way to all other aircraft. This would include all manned aircraft (i.e. aeroplanes, helicopters, gliders, ultra-lights, hot air balloons, etc.). It is expected that the UAV pilot would immediately land the UAV anytime a manned aircraft entered or came in close proximity to the area in which the UAV is operating.

(21) The pilot operating under this exemption shall only operate a UAV during daylight hours.

Note: Allowing aircraft to be flown outside daylight hours requires specified procedures and aircraft lighting and results in a more complex operation. Where UAVs are equipped with lights, the ability of the pilot to control the UAV at night using only the onboard lights is extremely difficult, and as such, there could be a need for additional ground lighting/illumination conditions to mitigate the risks of night operations. To operate a UAV at night, an SFOC would be required.

(22) The pilot operating under this exemption shall operate a UAV at or below 300 feet above ground level (AGL).

Note: 300 feet AGL corresponds to the altitude at which obstacles are required to be lit and marked in accordance with the CARs. Operators of manned aircraft understand that below these altitudes, additional objects are present that may be difficult to see. It must be understood that at all times it is the UAV pilot's responsibility to avoid other aircraft. It is up to the UAV pilot/operators to ensure they have an effective method for ensuring they do not operate above 300 feet, such as a barometric altimeter or GNSS based altitude system. Comparing the altitude of the UAV to surrounding buildings or structure could also be effective, provided that the exact height of those objects is known.

(23) The pilot conducting operations under this exemption shall only operate a UAV in Class G airspace.

Note: As these UAVs are not required to meet any mandatory communication, navigation, surveillance/air traffic management (CNS/ATM) equipment requirements, operations are limited to uncontrolled airspace (Class G). This equates to airspace in which no air traffic control service is provided to pilots. Additionally, operations under this exemption are restricted from transponder airspace, restricted airspace, control zones, controlled airspace and areas with higher volumes of manned aviation where UAV operations pose a greater risk to other airspace users. For these types of

operations an SFOC would be required. There are seven classes of airspace in Canada, each designated by a letter (A through G) and they are detailed below. The class of airspace can be determined through several sources including the Canada Flight Supplement, the Aeronautical Information Manual (AIM) (TP14371E) (http://www.tc.gc.ca/publications/en/tp14371/pdf/hr/tp14371e.pdf) and various VFR and IFR maps/charts. A variety of online "airspace viewers" are also available. However these viewers may use data that is unreliable, invalid or out-of-date and as such this data must be cross-checked with official sources such as aeronautical charts or the designated airspace handbook. Any official airspace viewer would use data from approved NAV CANADA or Transport Canada sources.

In general terms only,

- Class A airspace is controlled airspace and exists exclusively between flight level 180 and flight level 600 (this equates to approximately 18,000 ft to 60,000 ft above sea level (ASL)).
- Class B airspace is any controlled airspace between 12,500 ft ASL and up to 18,000 ft ASL. Occasionally, Class B airspace exists in other locations (control zones and associated terminal control areas), although this is unusual.
- Class C airspace is controlled airspace and includes control zones (CZ) around large airports. These areas usually have a 7-10 nautical mile radius up to a height of 3,000 ft above aerodrome elevation (AAE).
- Class D airspace is controlled airspace and may include areas around smaller aerodromes that have a five (5) nautical mile radius and a height of 3,000 ft AAE. Aerodromes with less busy airspace may have only a three (3) nautical mile radius control zone.
- Class E airspace is controlled airspace used for low-level flight routes and for aerodromes that need controlled airspace but do not meet the requirements for Classes A, B, C or D. Air Traffic Control (ATC) is available for aircraft operating under instrument flight rules only.
- Class F airspace is special use airspace. For entry into restricted Class F airspace, specific permission is required from the operating authority or user agency.

  Note: You may refer to the Designated Airspace Handbook (TP1820E) for specific dimensions and further information on Class F areas. http://www.navcanada.ca/EN/products-and-services/Documents/DAH_Current_EN.pdf
- Glass G airspace. Any airspace that is not designated, as described above, is classified as Class G airspace. Glass G airspace is uncontrolled airspace, however, it is still regulated airspace.

(24) The pilot operating under this exemption shall not operate a UAV within or over a forest fire area, or over any area that is located within five nautical miles of a forest fire area or in any airspace that is described in a NOTAM issued pursuant to section 601.16 of the *Canadian Aviation Regulations*.

Note: Operations in forest fire areas are extremely high risk with many types of aircraft operating at very low level. Introducing UAVs into this airspace would add an unacceptable level of risk to manned aircraft operations. Forest fire areas are restricted pursuant to section 601.16 of the CARs through the NOTAM system and UAV pilots are expected to review applicable NOTAMs as part of their pre-flight planning. As forest fires are unpredictable, a restriction of five (5) nautical miles is included from the fire area for all aircraft, including UAVs.

(25) The pilot operating under this exemption shall not operate a UAV in airspace that has been restricted by the Minister under Section 5.1 of the Aeronautics Act.

Note: Under the *Aeronautics Act*, section 5.1, the Minister may prohibit or restrict the operation of any aircraft on or over any area or within any airspace, either absolutely or subject to any exceptions or conditions. This type of restricted airspace is implemented where a prohibition or restriction is necessary for aviation safety or security or the protection of the public. An example of such restrictions could include security operations such as a G8/G20 Conference, major sporting events (e.g. an Olympic event) or an active shooter situation. NOTAMs are issued whenever a 5.1 airspace restriction is issued. Prior to the flight, UAV pilots would be expected to ensure there are no airspace restrictions in place for the area in which they plan on operating.

(26) The pilot operating under this exemption shall only operate a UAV at least five (5) nautical miles away from the centre of any aerodrome listed in the Canada Flight Supplement or the Water Aerodrome Supplement, excluding heliports.

Note: As the knowledge, experience and skill levels of the UAV pilots operating under these exemptions may not meet manned aviation standards and the aircraft are not required to meet any mandatory communications, navigation, surveillance/air traffic management (CNS/ATM) equipment requirements, operations are not permitted within five (5) NM of an aerodrome excluding heliports. As these UAVs cannot integrate into the flow of air traffic arriving and departing at an aerodrome, UAV operations pose an increased risk to other airspace users in the aerodrome environment. As such, an SFOC would be required to operate in these areas. Airports and seaplane bases are considered aerodromes. There are several tools that can be used to identify where aerodromes are located including aviation maps, the Canada Flight Supplement (CFS), the Water Aerodrome Supplement (WAS) and potentially some on-line tools (provided they are kept up to date) Any airspace viewer not using current and valid NAV CANADA or Transport Canada data must be cross-checked with official information. Although some UAV systems have “geofencing” functions provided on board, it must be understood that it remains the pilot’s responsibility to ensure the aircraft is only operated in appropriate areas. As none of these systems meet any certification or reliability standards, use of “geofencing” technology must be supplemented by other means to ensure compliance.

For some controlled aerodromes, the control zone extends beyond five (5) nautical miles from the centre of the aerodrome, as is the case with Canada’s major controlled airports. Therefore the larger of the two distances would then apply as the minimum distance from the centre of the aerodrome.

(27) The pilot operating under this exemption shall only operate a UAV at least three (3) nautical miles away from the centre of any heliport listed in the Canada Flight Supplement or Water Aerodrome Supplement or any aerodrome not listed in the Canada Flight Supplement or Water Aerodrome Supplement.

Note: There are hundreds of private aerodromes in Canada where the operator has chosen not to register the aerodrome in the CFS or WAS. Pilots are expected to conduct a ground or map survey of the area in which the UAV is intended to be flown, to ensure that there are no aerodromes closer than three (3) nautical miles away from the intended operation. This three (3) nautical mile distance applies to heliports which are listed in the CFS/WAS. Also note that some rivers and lakes not listed in the WAS are frequently used as landing and take-off areas during spring, summer, and fall, and would fall under the definition of an operating water aerodrome during these periods.

(28) The pilot operating under this exemption shall not operate a UAV in any control zone.

Note: This condition is self-explanatory since all operations can only be conducted in uncontrolled Class G airspace, however, it serves to emphasize the fact that at no time shall the UAV be flown in a control zone.

(29) The pilot operating under this exemption shall only operate a UAV at least three (3) nautical miles away from a built-up area.

Note: UAVs operated under these exemptions are not required to meet any technical airworthiness standards meaning that there is no assurance of the reliability, airworthiness or capabilities of the UAV system. This increases the risks to persons and property on the ground, therefore, UAVs operated under the exemption must not be operated near over or within built-up areas. Built-up areas are considered areas with groups of buildings or dwellings including anything from small hamlets to major cities. Anything larger than a farmstead is considered a built up area Additionally, open or green space areas, such as a parks, parking lots or recreational areas, within a city or town are areas contained within built-up areas and are considered prohibited areas within the context of the exemption. Pilots wishing to operate within a built-up area are required to apply for an SFOC.

(30) While complying with condition 29 above, the pilot operating under this exemption shall operate a UAV at a lateral distance of at least 500 feet from any building, structure, vehicle, vessel, animal or person unless:

(a) The building, structure, vehicle, vessel or animal is the subject of the aerial work; and

(b) Only persons inherent to the operation are present.

Note: This condition provides protection to person or property on the ground that are not part of the operation or have not accepted the risk of the UAV operating in their close proximity. It permits the use of the UAV closer than 500 feet from people or objects provided those people or objects are the specific reason for the operation and have accepted the risk associated with the operation (i.e. actors on a movie set, a vehicle used in a TV commercial, aerial inspection of buildings/structures, etc.). However, this would not include activities such as filming people at an outdoor concert or sporting event.

(31) The pilot operating under this exemption shall operate a UAV at a lateral distance of at least 500 feet from the general public, spectators, bystanders or any person not associated with the operation.

Note: For numerous reasons, the potential hazard of UAVs being flown near or over the general public and large crowds of people is significant. A security plan must be developed and adhered to in order to protect those people not involved with the UAV operation and to ensure that people do not interfere with the operation of the UAV.

(32) The pilot operating under this exemption shall not operate a UAV over an open-air assembly of persons.

Note: Similar to the previous condition, this provides protection to person or property on the ground that are not part of the operation and have not accepted the risk of the UAV operating in their close proximity.

(33) The pilot conducting operations under this exemption shall only operate a UAV under visual meteorological conditions, clear of cloud with not less than two (2) statute miles ground visibility.

Note: These weather limits are those required in Class G airspace for manned aircraft. The required visibility permits the UAV pilot to view, not only the UAV, but the surrounding airspace to ensure manned aircraft can be seen in sufficient time for the UAV pilot to take any required actions to avoid collisions. Additionally, it allows the UAV

pilot the opportunity to ensure that operations are kept clear of hazardous areas. The required weather forecasts and reports are accessible from several sources including the NAV CANADA flight planning website http://www.navcanada.ca/EN/products-and-services/Pages/flight-planning.aspx.

(34) The pilot conducting operations under this exemption shall be able to take immediate active control of a UAV at all times.

Note: Although the use of UAV automation is acceptable, autonomous systems which do not allow the pilot to intervene with the management of the flight are not permitted due to the potential unpredictability of their flight profile. The pilot of a UAV must be able to override the pre-programmed systems at any time, should there be a technical or safety issue with the UAV that requires pilot intervention.

(35) Any person conducting operations under this exemption shall establish and adhere to procedures to be followed in the event that control of the aircraft can no longer be maintained. Specifically:

(a) Procedures for contacting emergency responders;

(b) Procedures for landing/recovering the UAV safely;

(c) Procedures for contacting the appropriate air traffic service unit; and

(d) Name(s) of individuals responsible for following each of the above procedures.

Note: The UAV operator/pilot must have a complete set of pre-determined procedures in order to reduce the risks to other airspace users and people and property on the ground when a UAV fly-away occurs or the aircraft experiences an emergency or suffers a technical malfunction. To ensure appropriate actions are taken without delay, persons operating under this exemption must establish such procedures prior to commencement of flight operations. These procedures must be immediately available to the UAV pilot or any other individual assigned a task, so that there is no delay in the required actions being taken.

(36) Any person conducting operations under this exemption shall establish and adhere to an emergency contingency plan.

Note: Establishing and adhering to a security plan is mandatory to ensure that appropriate actions are taken without delay. This plan addresses the action to be taken should the UAV result in injury to third parties or damage to property. These procedures must be established prior to commencement of flight operations and actioned without delay.

(37) The pilot conducting operations under this exemption shall establish and follow normal, lost link and emergency procedures, including those established by the manufacturer.

Note: UAV pilots must have procedures that will address all normal operations of the UAV as well as abnormal and emergency situations. Failure to do so would impose hazards to both persons and property on the ground and other airspace users. Should the manufacturer stipulate procedures for specific occurrences, those procedures shall be followed unless they would result in an increased risk to other airspace users or people and property on the ground. Such procedures would generally be contained in standard operating procedures or checklists.

(38) Any person conducting operations under this exemption shall confirm that no unacceptable radio frequency interference to the UAV system is present prior to flight, nor is likely to be present during flight.

Note: Radio interference could come from many sources including high voltage power lines, transmission antennas and areas with large numbers of Wi-Fi transmitters or

around radar dishes/antennas. Radio interference may render the UAV uncontrollable. As such the UAV pilot/operator is responsible for confirming that no unacceptable radio interference to the UAV system exists prior to the operation of the aircraft.

(39) The pilot operating under this exemption shall not activate a flight termination system, if a UAV is so equipped, in such a manner as to endanger other airspace users or persons or property on the ground.

Note: As an added safety feature, several UAVs are equipped with a flight termination system intended to bring the UAV to the ground safely during specific emergency situations. The pilot is responsible for ensuring when and where it is safe to initiate such a flight termination. If part of the emergency plans includes the use of a flight termination system, operation of the UAV should be limited to flight over areas where, should the flight termination be activated, there is no risk to persons and property on the ground.

(40) Any person operating under this exemption shall not conduct a take-off/launch of a UAV unless the risk involved with lost link circumstances has been assessed and a determination has been made as to when auto-recovery manoeuvres or flight termination shall be initiated.

Note: Given the potential of UAVs to lose their communications links (lost-link) an assessment of these risks is essential. This assessment must address when it would be safe for the UAV to commence a pre-programmed “return home” manoeuvre (including routes and altitudes) or alternatively when the pilot would initiate flight termination.

(41) The pilot operating under this exemption shall not operate a UAV in known or forecast icing conditions.

Note: The degradation in aircraft performance and changes in flight characteristics when frozen contaminants are present are wide ranging and unpredictable. Contamination makes no distinction between large aircraft, small aircraft, helicopters or UAVs and the performance penalties can be significant. Additionally, there are no UAVs in these classes that are equipped with anti-ice or de-ice capabilities. These factors combined increase the risks associated with operating in icing conditions. Icing conditions can be experienced even when the temperatures are above the freezing mark and when no moisture is present on the ground.

(42) The pilot operating under this exemption shall not conduct a take-off/launch of a UAV that has frost, ice or snow adhering to any of its critical surfaces.

Note: In addition to the issues addressed above, conducting a take-off with contaminates such as ice or snow adhering to the critical surfaces (propeller, rotors, wings, etc.) will dramatically decrease flight performance resulting in an increased risk to persons and property on the ground.

(43) The pilot operating under this exemption shall not operate a UAV system unless it is operated in accordance with the operating limitations specified by the manufacturer.

Note: The pilot is responsible for operating the UAV in accordance with any specifications, directions or instructions provided by the manufacturer and for ensuring that any operating limitations relating to the operation of the UAV are adhered to.

(44) The pilot operating under this exemption shall not permit the use of a portable electronic device at the control station of a UAV system where the device may impair the functioning of the systems or equipment.

Note: Given the reliance on radio transmissions and off-the-shelf electronic devices, and the fact that no engineering testing has been conducted to determine the effects of portable electronic devices on the UAV, the pilot/operator must ensure that the operation of the UAV is not adversely affected by such devices. This would require that

electronic devices (i.e. cell phones, tablets, two-way radios, etc.), that are not part of the UAV system, not be in the immediate vicinity of the device controlling the UAV or any radio transmission devices associated with the UAV system.

(45) The pilot operating under this exemption shall not conduct a take-off/launch of a UAV if explosive, corrosive, flammable, bio-hazard or bright light emitting (laser) payloads, or any payloads that can be jettisoned, dispersed or dropped, are carried onboard.

Note: The carriage of such payloads increases the risks associated with the operations. As such, if operational requirements require the UAV to carry such hazardous payloads, the operator would be required to apply for an SFOC. This would allow the associated risks to be assessed and the appropriate conditions imposed to ensure safe operations. Additionally, if there is intent to use a laser onboard the UAV, there are specific requirements in the CARs with regard to requesting permission to use a laser from an aircraft. It should also be understood, that Lithium Ion and Lithium Polymer batteries are considered dangerous good. As such, should the UAV need to be shipped to another location, the operator would be required to comply with the Transportation of Dangerous Goods Act and various CARs applicable to transporting dangerous goods.

(46) A person operating under this exemption shall ensure the following operational and emergency equipment is immediately available:

(a) checklists or placards that enable a UAV system to be operated in accordance with the limitations specified by the manufacturer; and

(b) a hand-held fire extinguisher of a type suitable for extinguishing fires that are likely to occur.

Note: The pilot/operator must be prepared to handle any emergencies that occur as a result of operating the UAV (i.e. grass fire, injury to people of the ground, etc.). This requires that the appropriate procedures be developed and the required equipment be immediately available to those conducting the operation.

(47) The pilot conducting operations under this exemption shall remain clear of the take-off, approach and landing routes and the pattern of traffic formed by manned aircraft operating in the vicinity of aerodromes.

Note: The operation of this type of UAV in the vicinity of the traffic patterns used by manned aircraft is inherently dangerous and increases the risk to other airspace users. Although the UAVs operated under this exemption are required to remain outside five (5) nm from the centre of any aerodrome, there are many locations where manned aircraft can be on an instrument approach at low altitudes outside 5 nm. As such, if the pilot intends to operate anywhere within 10 nm of an aerodrome it is highly recommended that they confirm where the instrument approaches and traffic patterns are located. This information could be found in various aeronautical information publications (i.e. Canada Flight Supplement, instrument approach plates in the Canada Air Pilot, etc.) and may also be available at a local flying school or an air traffic service unit in that area.

(48) Any person conducting operations under this exemption shall ensure that the appropriate air traffic service unit(s) is advised immediately anytime the flight of a UAV inadvertently enters into controlled airspace.

Note: A UAV entering controlled airspace, without coordination/permission could present a significant risk to manned aviation. Should a fly-away occur that would result in the UAV entering controlled airspace, the UAV pilot/operator must immediately contact the applicable Air Traffic Control (ATC) or Flight Service Station facility in order to ensure that ATC can take appropriate actions and that the safety of other airspace users is addressed. The boundaries of controlled airspace can be found on various

aeronautical aviation products (i.e. Canada Flight Supplement, visual navigation charts, terminal area charts, etc.). Where a pilot has not previously coordinated flight activities with the local air traffic service unit they should contact the NAV CANADA National Operations Centre at 613-563-5626 and provide the details of the situation (e.g. type of UAV, last known altitude, direction it was flying, remaining flight time, etc.).

(49) The pilot operating a UAV under this exemption, before entering or operating within the Canadian Air Defence Identification Zone (ADIZ), shall comply with section 601.145 of the CARs.

Note: The ADIZ is airspace of defined dimensions at which special procedures are required to identify aircraft entering or operating within that airspace. In order to ensure that the Air Traffic System (ATS) is aware that a UAV will be operating into or within the ADIZ, the ATS unit requires that pilots file a Defence Flight Plan or Flight Itinerary. Additional information can be found in the Aeronautical Information Manual (AIM). Failing to do so may result in the inadvertent activation/response of North American Aerospace Defense Command (NORAD) resources.

5.3 Pilot Training Conditions

(50) The pilot operating a UAV system under this exemption shall have successfully completed a pilot ground school program that provides instruction on the following subject areas:

(a) airspace classification and structure;

(b) meteorological and NOTAM reporting services;

(c) interpretation of aeronautical charts and the Canada Flight Supplement; and

(d) applicable content of the CARs.

Note: It is essential that the pilot of a UAV become knowledgeable in order to conduct safe flight operations. Pilots will need to understand airspace classification and structure, be familiar with meteorological and NOTAM reporting services, interpretation of aeronautical charts and the CFS/WAS as well as applicable content of the CARs. Pilot knowledge training could be provided by an existing flight training facility (manned or unmanned), an online course, a self-administered training program, or some combination of these options. Training facilities and online courses should provide certificates or letters of completion while for self-administered training, it is essential to document the knowledge items covered, the time spent on each item, the references used, and the date of completion of all items. The CARs and the Aeronautical Information Manual (AIM) are also excellent sources of information to enhance one's understanding of aviation related activities. Pilots may also wish to refer to the document entitled, "Knowledge requirements for Pilots operating Unmanned Air Vehicle Systems (UAV) 25 Kg or less, Operating within visual line-of-sight" (TP15263E) http://www.tc.gc.ca/eng/civilaviation/publications/page-6557.html

Pilots must also have received sufficient practical training in the operation of the aircraft to operate safely. In many cases, manufacturers provide such training. Unmanned Systems Canada may also be a useful resource in finding possible training programs in your area. Evidence of completion of practical training should take the form of a signed and dated letter or certificate from the training provider, or a dated signature and stamp in a log-book.

(51) The pilot conducting operations under this exemption shall be appropriately trained on the UAV system and qualified for the area and type of operation as referred to in Transport Canada Advisory Circular 600-002.

Note: In addition to the basic knowledge requirements required in Condition 47, the pilot of a UAV must obtain training and be considered competent and proficient to operate the specific UAV system in the proposed area of operation. This would require knowledge training on the aircraft's system, the normal and emergency procedures and any limitations for the operation of the UAV. Additionally, practical training would be required to become competent with the actual flying of the UAV. This training could be provided by other pilots, manufacturers, UAV flight training organizations or could be self-taught. Evidence of completion of practical training should take the form of a signed and dated letter or certificate from the training provider, or a dated signature and stamp in a log-book.

5.4 UAV System Conditions

(52) Any person conducting operations under this exemption shall, prior to conducting a take-off/launch of a UAV, ensure that there is a means of:

(a) Controlling the flight of the UAV;

(b) Monitoring the UAV system;

(c) Navigation;

(d) Communication, as required by the CARs;

(e) Detecting hazardous environmental flight conditions;

(f) Mitigating the risk of loss of control of the UAV;

(g) Sensing and avoiding other aircraft;

(h) Avoiding flight into obstacles and terrain; and

(i) Remaining clear of cloud.

Note: Given the increased complexity and risk of operating a UAV with a maximum take-off weight of up to 25 Kg, there must be appropriate means to safely control, operate and monitor the UAV. The methods of compliance do not necessarily have to be technical solutions (e.g. sense and avoid and navigation may be conducted by the pilot using visual line-of-sight techniques).

(53) Any person conducting operations under this exemption shall ensure that a UAV system is in a fit and safe state for flight prior to take-off/launch.

Note: No aircraft, including UAVs, should be taken airborne if the aircraft is not in a condition to sustain safe flight. This would require preflight inspections and checks to ensure, among other things, that the UAV is not damaged, there is sufficient fuel/battery charge to last for the planned flight (with a reasonable reserve) and confirmation that the radio link is working properly.

(54) Any person conducting operations under this exemption shall ensure that a UAV is not flown if it has been subjected to any abnormal occurrence unless it has been inspected for damage and repaired, if needed to ensure safe operation.

Note: Should a UAV sustain any abnormal occurrence (i.e. a hard landing, crash, become wet, land in water, etc.) it must not fly again until has been inspected for damage and has been repaired, including the replacement of any damaged parts/components.

(55) Any person conducting operations under this exemption shall ensure that all maintenance, servicing and disassembly-assembly of a UAV system and associated components are performed in accordance with procedures described in the manufacturer's specifications.

Note: It is critical for the safety of other airspace users and persons and property on the ground that any manufacturer specifications or instruction be followed when it comes to the repair, maintenance and assembly/disassembly of the UAV system. The pilot/operator is responsible for ensuring the any such direction is complied with.

(56) Any person conducting operations under this exemption shall ensure that the requirements of any airworthiness directives, or equivalent, issued by the manufacturer have been completed.

Note: Should the manufacturer of the UAV issue an airworthiness directive, product recall, or other such notice indicating that the UAV is defective or has a mechanical concern, the pilot/operator shall cease to operate the UAV until the issue has been repaired/corrected. Any such repairs must be done in accordance with the guidance provided by the manufacturer.

(57) Any person operating under this exemption shall ensure that the UAV is not equipped with an emergency locator transmitter (ELT).

Note: ELTs are used to notify rescue officials of downed aircraft (e.g. hard landing, crash) and guide search and rescue (SAR) personnel to the sight of the downed aircraft so that the passengers and crew can be assisted. As UAVs carry neither passengers nor crew, it would be inappropriate to dispatch SAR assets as this would waste critical resources, unnecessarily place SAR personnel at risk and potential divert SAR assets from higher priority activities.

5.5 Reporting Conditions

(58) Any person operating under this exemption shall, prior to the commencement of operations, notify the Minister, in writing, of:

(a) Their name, address, telephone number and e-mail;

(b) The model of UAV(s) being operated including serial number(s), where appropriate;

(c) The type of work being conducted;

(d) The geographic boundaries or area(s) where the operation will be conducted; and

(e) Confirmation that:

(i) the exemption has been read and understood;

(ii) flights will only be conducted in Class G airspace;

(iii) flights will only be conducted at the applicable distance from aerodromes as stipulated in conditions 26 and 27; and

(iv) flights will only be conducted at the distance from built-up areas specified in Condition 29.

Note: This information allows Transport Canada the opportunity to assess the effectiveness of its regulatory activities and be provided with basic information on who is operating in various areas so that they can be contacted, should there be need to do so (e.g. recovery of a lost UAV).

When referring to the geographic boundaries/location, the use of latitude and longitude is the preferred unit of measure.

Such notification will need to be e-mailed to TC.UAVExemptionNotification-NotificationExemptionUAV.TC@tc.gc.ca. An Exemption Notification form can also be accessed through the Transport Canada UAV website.

(59) Any person operating under this exception shall notify the Minister within 10 working days of any change to the information provided in the above condition or upon the permanent cessation of UAV system operations.

Note: In order to ensure that the information above remains current and valid there is a requirement to notify the Minister of any changes to the original notification provided under condition 55 above. Operators should use the same email address provided above.

(60) Any person conducting operations under this exemption shall report to the closest Transport Canada Civil Aviation office, as soon as possible, details of any of the following aviation occurrences during the operation of a UAV system:

(a) Injuries to any person requiring medical attention;

(b) Unintended contact between a UAV and persons, livestock, vehicles, vessels or other structures;

(c) Unanticipated damage incurred to the airframe, control station, payload or command and control links that adversely affects the performance or flight characteristics of the UAV;

(d) Anytime the UAV is not kept within the geographic boundaries and/or altitude limits as outlined in this exemption;

(e) Any collision or risk of collision with another aircraft;

(f) Anytime the UAV becomes uncontrollable, experiences a fly-away or is missing; and

(g) Any other incident that results in a Canadian Aviation Daily Occurrence Report (CADORS).

Note: In addition to the operator's responsibilities under the *Canadian Transportation Accident Investigation and Safety Board Act*, they must also advise Transport Canada should any of the above occurrences (incidents or accidents) occur. This is to ensure that the cause of any such occurrence is determined and appropriate mitigation/corrective measures are implemented in order to reduce the likelihood of a reoccurrence.

(61) Any person conducting operations under this exemption shall, following any of the aviation occurrences listed above, cease operations until such time as the cause of the occurrence has been determined and corrective actions have been taken to eliminate the risk of reoccurrence.

Note: In order to reduce the risk to other airspace users and people and property on the ground, flight operations under this exemption must cease if one of the above occurrences is experienced.

6.0 Penalties

(1) Transport Canada is serious about safety. Using your UAV in a reckless and negligent manner (e.g. not complying with the conditions in the exemptions) could lead to penalties and fines. Additionally this type of negligence could cause fatalities, resulting in lawsuits, fines and jail time.

(2) Penalties may be assessed in the amount of $5,000 for individuals and $25,000 for corporations for those that should be operating under an SFOC, but are not.

(3) The *Criminal Code of Canada* describes several offences involving the dangerous operation of aircraft and endangering the safety of other aircraft. Committing such offences is punishable by monetary penalties and/or jail time including imprisonment for life.

(4) Other penalties may apply against other regulations outlined in section 2.1.

7.0 INFORMATION MANAGEMENT

Not applicable.

8.0 DOCUMENT HISTORY

This is the second release of this Advisory Circular.

9.0 CONTACT OFFICE

For more information about the exemptions and conditions for operating your unmanned air vehicle or for operating it safely, contact the Transport Canada Civil Aviation Communications Centre:

Phone: 1-800-305-2059

Email: services@tc.gc.ca

(*original signed by*)

Robert Sincennes
Director, Standards
Civil Aviation

APPENDIX A

EXEMPTION FROM SECTIONS 602.41 AND 603.66 OF THE *CANADIAN AVIATION REGULATIONS*

Pursuant to Subsection 5.9(2) of the Aeronautics Act, and after having determined that the exemption is in the public interest and is not likely to adversely affect aviation safety, I hereby exempt persons conducting flight operations utilizing unmanned air vehicles (UAVs), with a maximum take-off weight of 1 kilogram or less, operated within visual line-of-sight, from the requirements of sections 602.41 and 603.66 of the *Canadian Aviation Regulations* (CARs), subject to the conditions set out below.

Excerpts from the CARs are included in Appendix C.

INTERPRETATION

For the purpose of this exemption:

Autonomous - means the ability to execute processes or missions using onboard decision-making capabilities. An autonomous UAV system is not designed to permit crew member intervention.

Command and Control (C2) Link – means the data link between the UAV and the control station for the purposes of managing the flight.

Control Station – means the facilities and/or equipment remote from the UAV from which the aircraft is controlled and/or monitored.

First Person View (FPV) Device – means a device that generates and transmits a streaming video image to a control station display or monitor giving the pilot who is viewing this video, the illusion of actually flying the UAV from an onboard pilot's perspective.

Lost Link - means the loss of command and control link contact with the UAV such that the pilot can no longer manage the aircraft's flight.

UAV Operator - means the person that has possession of the UAV system, as owner, lessee or otherwise.

UAV System – means a set of configurable elements consisting of an UAV, its associated control station(s), the required command and control links and any other elements as may be required, at any point during flight operation

Visual line-of-sight (VLOS) - means unaided (corrective lenses and/or sunglasses exempted) visual contact with the UAV sufficient to be able to maintain operational control of the aircraft, know its location, and be able to scan the airspace in which it is operating to decisively see and avoid other air traffic or objects.

Visual Observer - means a trained crew member, in visual line-of-sight of the UAV, who assists the pilot in the duties associated with collision avoidance and complying with the applicable rules of flight.

PURPOSE

This exemption relieves persons conducting UAV system operations utilizing a UAV with a maximum take-off weight of 1 kilogram or less, operated within visual line-of-sight from the requirement to obtain a Special Flight Operations Certificate (SFOC) as required by section 602.41 and the requirement to comply with the conditions of an SFOC as required by section 603.66 of the CARs.

The exemption will permit UAVs with a maximum take-off weight of 1 kilogram or less to be operated away from built-up areas, controlled airspace, aerodromes, forest fire areas and other restricted locations.

UAV operations conducted outside the terms and conditions of this exemption are subject to the requirements for an SFOC, regardless of the weight of the UAV.

APPLICATION

This exemption applies to any person conducting UAV system operations within Canadian Domestic Airspace utilizing UAVs with a maximum take-off weight of 1 kilogram or less within visual line-of-sight.

This exemption does not apply to:

a) Operations of model aircraft;
b) Operations of an Autonomous UAV; or
c) Operations by a foreign UAV operator.

This exemption ceases to apply to a person breaching a condition of the exemption.

CONDITIONS

General Conditions

(1) Any person conducting operations under this exemption shall conduct a safe operation and shall not pose a risk to aviation safety.

(2) Any person operating under this exemption shall not operate a UAV system in such a reckless or negligent manner so as to endanger or be likely to endanger the life or property of any person.

(3) Any person operating under this exemption shall be a minimum of 18 years of age, or be at least 16 years of age and conducting research under the supervision of an academic institution.

(4) Any person conducting operations under this exemption shall subscribe for liability insurance covering risks of public liability at the levels described in subsection 606.02 (8) of the *Canadian Aviation Regulations* and in any case shall have no less than $100,000 in liability insurance coverage pertaining to the operation of the UAV system.

(5) The pilot operating under this exemption shall not operate the controls of a UAV if they have any reason to believe that they are suffering or are likely to suffer from fatigue, or suffering from any other condition which would render them unfit to perform their duties.

(6) The pilot operating under this exemption shall not operate a UAV system within eight (8) hours after consuming an alcoholic beverage or while under the influence of alcohol or while using any drug that impairs the person faculties to the extent that the safety of the operation is endangered in any way.

(7) Any person conducting operations under this exemption shall be familiar with the relevant aeronautical information that is appropriate to the intended flight, before commencing a flight.

(8) Any person operating under this exemption shall not operate a UAV in any special aviation event requiring an SFOC under Part VI, Subpart 3, Division 1 of the *Canadian Aviation Regulations*.

(9) Any person conducting operations under this exemption shall obtain permission from the owner(s) of the property on which a UAV intends to take-off/launch from and/or land/recover on.

(10) Any person conducting operations under this exemption shall, prior to commencing operations, perform a site survey to assess the suitability of each location and confirm that safe operations can be conducted.

(11) Any person conducting operations under this exemption shall cease operations if at any time the safety of other airspace users or persons or property on the ground is in jeopardy, or if the person conducting operations is unable to comply with the conditions of this exemption.

(12) A copy of the following documents shall be accessible to any person conducting operations under this exemption:

(a) The exemption;

(b) Proof of liability insurance coverage;

(c) Name, address and telephone number of the UAV operator;

(d) A copy of the UAV system operating limitations; and

(e) Evidence that the training required in condition 40 has been completed.

(13) A person conducting operations under this exemption shall immediately produce any of the documents and/or information listed in condition 12 to a peace officer, police officer, or Transport Canada inspector upon request.

(14) No person operating under this exemption is relieved from complying with the provisions of any other relevant Acts, Regulations or laws or from any level of government.

Flight Conditions

(15) The pilot operating under this exemption shall maintain continuous unaided visual contact with the UAV sufficient to be able to maintain operational control of the UAV, know its location and be able to scan the airspace in which it is operating to decisively see and avoid other air traffic or objects.

(16) The pilot operating under this exemption shall not operate the UAV further than one-quarter (¼) nautical mile from the location from which the pilot is operating the UAV.

(17) The pilot operating under this exemption shall not use a first person view device.

(18) The pilot operating under this exemption shall only operate a UAV from a single control station and control relays or visual observers to extend the operational area are prohibited.

(19) The pilot shall operate no more than one UAV at any one time.

(20) The pilot operating a UAV shall give way to manned aircraft at all times.

(21) The pilot conducting operations under this exemption shall only operate a UAV during daylight hours.

(22) The pilot operating under this exemption shall operate a UAV at or below 300 feet above ground level (AGL).

(23) The pilot conducting operations under this exemption shall only operate a UAV in Class G airspace.

(24) The pilot operating under this exemption shall not operate a UAV within or over a forest fire area, or over any area that is located within five nautical miles of a forest fire area.

(25) The pilot operating under this exemption shall not operate a UAV in airspace that has been restricted by the Minister under Section 5.1 of the *Aeronautics Act*.

(26) The pilot operating under this exemption shall only operate a UAV at least five (5) nautical miles away from the centre of any aerodrome listed in the Canada Flight Supplement or the Water Aerodrome Supplement, excluding heliports.

(27) The pilot operating under this exemption shall only operate a UAV at least three (3) nautical miles away from the centre of any heliport listed in the Canada Flight Supplement or Water Aerodrome Supplement or any aerodrome not listed in the Canada Flight Supplement or Water Aerodrome Supplement.

(28) The pilot operating under this exemption shall not operate a UAV in any control zone.

(29) The pilot operating under this exemption shall not operate a UAV over or within a built up area.

(30) While complying with condition 29 above, the pilot operating under this exemption shall operate a UAV at a lateral distance of at least 100 feet away from any building, structure, vehicle, vessel, animal or person unless:

(a) The building, structure, vehicle, vessel or animal is the subject of the aerial work; and

(b) Only persons inherent to the operation are present.

(31) The pilot operating under this exemption shall operate a UAV at a lateral distance of at least 100 feet from the general public, spectators, bystanders or any person not associated with the operation.

(32) The pilot operating under this exemption shall not operate a UAV over or within an open-air assembly of persons.

(33) The pilot conducting operations under this exemption shall only operate a UAV under visual meteorological conditions, clear of cloud with not less than two (2) statute miles ground visibility.

(34) The pilot conducting operations under this exemption shall be able to take immediate active control of a UAV at all times.

(35) The pilot conducting operations under this exemption shall establish and follow normal, lost link and emergency procedures, including those established by the manufacturer.

(36) Any person conducting operations under this exemption shall confirm that no unacceptable radio frequency interference to the UAV system is present prior to flight, nor is likely to be present during flight.

(37) The pilot operating under this exemption shall not operate a UAV system unless it is operated in accordance with the operating limitations specified by the manufacturer.

(38) The pilot operating under this exemption shall not conduct a take-off/launch of a UAV if explosive, corrosive, flammable, bio-hazard or bright light emitting (laser) payloads are carried onboard.

(39) Any person conducting operations under this exemption shall ensure that the appropriate air traffic service unit(s) is advised immediately anytime the flight of a UAV inadvertently enters into controlled airspace.

Pilot Training Condition

(40) The pilot conducting operations under this exemption shall have the appropriate knowledge, training on the UAV system and qualifications for the area and type of operation, as referred to in Transport Canada Advisory Circular 600-004.

Reporting Conditions

(41) Any person operating under this exemption shall, prior to the commencement of operations, notify the Minister, in writing, of:

- (a) Their name, address, telephone number and e-mail;
- (b) The model of UAV(s) being operated including serial number(s), where appropriate;
- (c) The type of work being conducted;
- (d) The geographic boundaries or area(s) where the operation will be conducted; and
- (e) Confirmation that:
  - (i) the exemption has been read and understood;
  - (ii) flights will only be conducted in Class G airspace;
  - (iii) flights will only be conducted at the applicable distance from the centre of any aerodrome as specified in conditions 26 and 27; and
  - (iv) flights will only be conducted at the applicable distance from built-up areas specified in condition 29 of this exemption.

(42) Any person operating under this exception shall notify the Minister within 10 working days of any change to the information provided in the above condition or upon the permanent cessation of UAV system operations.

UAV System Condition

(43) Any person conducting operations under this exemption shall ensure that a UAV system is in a fit and safe state for flight prior to take-off/launch.

VALIDITY

This exemption is in effect until the earliest of the following:

a) December 31, 2019 at 23:59 (EST);

b) the date on which this exemption is cancelled in writing by the Minister, where he is of the opinion that the exemption is no longer in the public interest, or that it is likely to adversely affect aviation safety.

c) the date on which an amendment to the appropriate provisions of the *Canadian Aviation Regulations* or related standards, modifying the subject-matter specifically addressed in this exemption, comes into force.

Dated at Ottawa, Ontario, Canada this 9th day of December, 2016, **on behalf of the Minister of Transport.**

(*original signed by*)

Denis Guindon
Director General, Aviation Safety Oversight and Transformation
Civil Aviation

APPENDIX B

EXEMPTION FROM SECTIONS 602.41 AND 603.66 OF THE *CANADIAN AVIATION REGULATIONS*

Pursuant to Subsection 5.9(2) of the Aeronautics Act, and after having determined that the exemption is in the public interest and is not likely to adversely affect aviation safety, I hereby exempt persons conducting flight operations utilizing unmanned air vehicles (UAVs) with a maximum take-off weight exceeding 1 kilogram up to and including 25 kilograms, with a maximum calibrated airspeed of 87 knots or less, operated within visual line-of-sight from the requirements of sections 602.41 and 603.66 of the *Canadian Aviation Regulations* (CARs), subject to the conditions set out below.

Excerpts from the CARs are included in Appendix C.

INTERPRETATION

For the purpose of this exemption:

Autonomous - means the ability to execute processes or missions using onboard decision making capabilities. An autonomous UAV system is not designed to permit crew member intervention.

Command and Control Link – means the data link between the UAV and the control station for the purposes of managing the flight.

Control Station – means the facilities and/or equipment remote from the UAV from which the aircraft is controlled and/or monitored.

First Person View (FPV) Device – means a device that generates and transmits a streaming video image to a control station display or monitor giving the pilot who is viewing this video, the illusion of actually flying the UAV from an onboard pilot's perspective.

Flight Termination System - means the system that, upon initiation, terminates the flight of a UAV in a manner so as not to cause significant damage to property or severe injury to persons on the ground.

Fly-away - means an interruption or loss of the command and control link where the pilot is unable to affect control of the UAV and the aircraft is no longer following its preprogrammed procedures resulting in the UAV not operating in a predictable or planned manner.

Lost Link - means the loss of command and control link contact with the UAV such that the pilot can no longer manage the aircraft's flight.

UAV Operator - means the person that has possession of the UAV system, as owner, lessee or otherwise.

UAV System – means a set of configurable elements consisting of an unmanned air vehicle, its associated control station(s), the required command and control links and any other elements as may be required, at any point during flight operation.

Visual line-of-sight (VLOS) - means unaided (corrective lenses and/or sunglasses exempted) visual contact with the UAV sufficient to be able to maintain operational control of the aircraft, know its location, and be able to scan the airspace in which it is operating to decisively see and avoid other air traffic or objects.

Visual Observer - means a trained crew member, in visual line-of-sight of the UAV, who assists the pilot in the duties associated with collision avoidance and complying with the applicable rules of flight.

PURPOSE

This exemption relieves persons conducting UAV system operations utilizing a UAV with a maximum take-off weight exceeding 1kg up to and including 25kgs, operated within visual line-of-sight from the requirement to obtain a Special Flight Operations Certificate (SFOC) as required by section 602.41 and the requirement to comply with the conditions of an SFOC as required by section 603.66 of the CARs.

The exemption will permit UAVs with a maximum take-off weight exceeding 1kg up to and including 25kgs and with maximum calibrated airspeed of 87 knots or less to be operated away from built-up areas, airspace, controlled aerodromes, forest fire areas and other restricted locations. UAV operations conducted outside the terms and conditions of this exemption are subject to the requirements for an SFOC, regardless of the weight of the UAV.

APPLICATION

This exemption applies to any person conducting UAV system operations within Canadian Domestic Airspace utilizing a UAV with a maximum take-off weight exceeding 1kg up to and including 25kgs operated within visual line-of-sight.

This exemption does not apply to:

a) Operations of model aircraft;
b) Operations of an Autonomous UAV; or
c) Operations by a foreign UAV operator.

This exemption ceases to apply to a person breaching a condition of the exemption.

CONDITIONS

General Conditions

(1) Any person conducting operations under this exemption shall conduct a safe operation and shall not pose a risk to aviation safety.

(2) Any person operating under this exemption shall not operate a UAV system in such a reckless or negligent manner so as to endanger or be likely to endanger the life or property of any person.

(3) Any person operating under this exemption shall be a minimum of 18 years of age, or be at least 16 years of age and conducting research under the supervision of an academic institution.

(4) Any person conducting operations under this exemption shall subscribe for liability insurance covering risks of public liability at the levels described in subsection 606.02 (8) of the *Canadian Aviation Regulations* and in any case shall have no less than $100,000 in liability insurance coverage pertaining to the operation of the UAV.

(5) The pilot operating under this exemption shall not operate the controls of a UAV if they have any reason to believe that they are suffering or are likely to suffer from fatigue, or suffering from any other condition which would render them unfit to perform their duties.

(6) The pilot operating under this exemption shall not operate a UAV system within eight (8) hours after consuming an alcoholic beverage or while under the influence of alcohol or while using any drug that impairs the person faculties to the extent that the safety of the operation is endangered in any way.

(7) Any person conducting operations under this exemption shall be familiar with the relevant aeronautical information that is appropriate to the intended flight, before commencing a flight.

(8) Any person operating under this exemption shall not operate a UAV in any special aviation event requiring an SFOC under Part VI, Subpart 3, Division 1 of the *Canadian Aviation Regulations*.

(9) Any person conducting operations under this exemption shall obtain permission from the owner(s) of the property on which a UAV intends to take-off/launch from and/or land/recover on.

(10) Any person conducting operations under this exemption shall, prior to commencing operations, perform a site survey to assess the suitability of each location and confirm that safe operations can be conducted.

(11) Any person conducting operations under this exemption shall cease operations if at any time the safety of other airspace users or persons or property on the ground is in jeopardy, or if the person conducting operations is unable to comply with the conditions of this exemption.

(12) A copy of the following documents shall be accessible to any person conducting operations under this exemption.

- (a) The exemption;
- (b) Proof of liability insurance coverage;
- (c) Name, address and telephone number of the UAV operator;
- (d) A copy of the UAV system operating limitations; and

(e) Evidence that the training required in condition 50 and 51 has been completed.

(13) A person conducting operations under this exemption shall immediately produce any of the documents and/or information listed in condition 12 to a peace officer, police officer, or Transport Canada inspector upon request.

(14) No person operating under this exemption is relieved from complying with the provisions of any other relevant Acts, Regulations or laws or from any level of government.

Flight Conditions

(15) The pilot operating under this exemption shall maintain continuous unaided visual contact with the UAV sufficient to be able to maintain operational control of the UAV, know its location and be able to scan the airspace in which it is operating to decisively see and avoid other air traffic or objects.

(16) The pilot operating under this exemption shall not operate the UAV further than one-half (½) nautical mile from the location from which the pilot is operating the UAV.

(17) The pilot operating under this exemption shall not use a first person view device.

(18) The pilot operating under this exemption shall only operate a UAV from a single control station and control relays or visual observers to extend the operational area are prohibited.

(19) The pilot shall operate no more than one UAV at any one time.

(20) The pilot operating a UAV shall give way to manned aircraft at all times.

(21) The pilot operating under this exemption shall only operate a UAV during daylight hours.

(22) The pilot operating under this exemption shall operate a UAV at or below 300 feet above ground level (AGL).

(23) The pilot conducting operations under this exemption shall only operate a UAV in Class G airspace.

(24) The pilot operating under this exemption shall not operate a UAV within or over a forest fire area, or over any area that is located within five (5) nautical miles of a forest fire area.

(25) The pilot operating under this exemption shall not operate a UAV in airspace that has been restricted by the Minister under Section 5.1 of the *Aeronautics Act*.

(26) The pilot operating under this exemption shall only operate a UAV at least five (5) nautical miles away from the centre of any aerodrome listed in the Canada Flight Supplement or the Water Aerodrome Supplement, excluding heliports.

(27) The pilot operating under this exemption shall only operate a UAV at least three (3) nautical miles away from the centre of any heliport listed in the Canada Flight Supplement or Water Aerodrome Supplement or any aerodrome not listed in the Canada Flight Supplement or Water Aerodrome Supplement.

(28) The pilot operating under this exemption shall not operate a UAV in any control zone.

(29) The pilot operating under this exemption shall only operate a UAV at least three (3) nautical miles away from a built-up area.

(30) While complying with condition 29 above, the pilot operating under this exemption shall operate a UAV at a lateral distance of at least 500 feet away from any building, structure, vehicle, vessel, animal or person unless:

(a) The building, structure, vehicle, vessel or animal is the subject of the aerial work; and

(b) Only persons inherent to the operation are present.

(31) The pilot operating under this exemption shall operate a UAV at a lateral distance of at least 500 feet from the general public, spectators, bystanders or any person not associated with the operation.

(32) The pilot operating under this exemption shall not operate a UAV over or within an open-air assembly of persons.

(33) The pilot conducting operations under this exemption shall only operate a UAV under visual meteorological conditions, clear of cloud with not less than two (2) statute miles ground visibility.

(34) The pilot conducting operations under this exemption shall be able to take immediate active control of a UAV at all times.

(35) Any person conducting operations under this exemption shall establish and adhere to procedures to be followed in the event that control of the UAV can no longer be maintained. Specifically:

(a) Procedures for contacting emergency responders;

(b) Procedures for landing/recovering the UAV safely;

(c) Procedures for contacting the appropriate air traffic service unit; and

(d) Name(s) of individuals responsible for following each of the above procedures.

(36) Any person conducting operations under this exemption shall establish and adhere to an emergency contingency plan.

(37) The pilot conducting operations under this exemption shall establish and follow normal, lost link and emergency procedures, including those established by the manufacturer.

(38) Any person conducting operations under this exemption shall confirm that no unacceptable radio frequency interference to the UAV system is present prior to flight, nor is likely to be present during flight.

(39) The pilot operating under this exemption shall not activate a flight termination system, if a UAV is so equipped, in such a manner as to endanger other airspace users or persons or property on the ground.

(40) Any person operating under this exemption shall not conduct a take-off/launch of a UAV unless the risk involved with lost link circumstances has been assessed and a determination has been made as to when auto-recovery manoeuvres or flight termination shall be initiated.

(41) The pilot operating under this exemption shall not operate a UAV in known or forecast icing conditions.

(42) The pilot operating under this exemption shall not conduct a take-off/launch of a UAV that has frost, ice or snow adhering to any of its critical surfaces.

(43) The pilot operating under this exemption shall not operate a UAV system unless it is operated in accordance with the operating limitations specified by the manufacturer.

(44) The pilot operating under this exemption shall not permit the use of a portable electronic device at the control station of a UAV system where the device may impair the functioning of the systems or equipment.

(45) The pilot operating under this exemption shall not conduct a take-off/launch of a UAV if explosive, corrosive, flammable, bio-hazard or bright light emitting (laser) payloads, or any payloads that can be jettisoned, dispersed or dropped, are carried onboard.

(46) The pilot operating under this exemption shall ensure the following operational and emergency equipment is immediately available:

(a) checklists or placards that enable a UAV system to be operated in accordance with the limitations specified by the manufacturer; and

(b) a hand-held fire extinguisher of a type suitable for extinguishing fires that are likely to occur.

(47) The pilot conducting operations under this exemption shall remain clear of the take-off, approach and landing routes and the pattern of traffic formed by manned aircraft operating in the vicinity of aerodromes.

(48) Any person conducting operations under this exemption shall ensure that the appropriate air traffic service unit(s) is advised immediately anytime the flight of a UAV inadvertently enters into controlled airspace.

(49) The pilot operating a UAV under this exemption, before entering or operating within in the Canadian Air Defence Identification Zone (ADIZ), shall comply with section 601.145 of the *Canadian Aviation Regulations*.

Pilot Training Conditions

(50) The pilot operating a UAV system under this exemption shall have successfully completed a pilot ground school program that provides instruction on the following subject areas:

(a) airspace classification and structure;

(b) meteorological and NOTAM reporting services;

(c) interpretation of aeronautical charts and the Canada Flight Supplement; and

(d) applicable content of the *Canadian Aviation Regulations*;

(51) The pilot conducting operations under this exemption shall be appropriately trained on the UAV system and qualified for the area and type of operation as referred to in Transport Canada Advisory Circular 600-004.

UAV System Conditions

(52) Any person conducting operations under this exemption shall, prior to conducting a take-off/launch of a UAV, ensure that there is a means of:

(a) Controlling the flight of the UAV;

(b) Monitoring the UAV system;

(c) Navigation;

(d) Communication, as required by the *Canadian Aviation Regulations*;

(e) Detecting hazardous environmental flight conditions;

(f) Mitigating the risk of loss of control of the UAV;

(g) Sensing and avoiding other aircraft;

(h) Avoiding flight into obstacles and terrain; and

(i) Remaining clear of cloud.

(53) Any person conducting operations under this exemption shall ensure that a UAV system is in a fit and safe state for flight prior to take-off/launch.

(54) Any person conducting operations under this exemption shall ensure that a UAV is not flown if it has been subjected to any abnormal occurrence unless it has been inspected for damage and repaired, if needed to ensure safe operation.

(55) Any person conducting operations under this exemption shall ensure that all maintenance, servicing and disassembly-assembly of a UAV system and associated components are performed in accordance with procedures described in the manufacturer's specifications.

(56) Any person conducting operations under this exemption shall ensure that the requirements of any airworthiness directives, or equivalent, issued by the manufacturer have been completed.

(57) Any person operating under this exemption shall ensure that the UAV is not equipped with an emergency locator transmitter (ELT).

Reporting Conditions

(58) Any person operating under this exemption shall, prior to the commencement of operations, notify the Minister, in writing, of:

- (a) Their name, address, telephone number and e-mail;
- (b) The model of UAV(s) being operated including serial number(s), where appropriate;
- (c) The type of work being conducted;
- (d) The geographic boundaries or area(s) where the operation will be conducted; and
- (e) Confirmation that:
  - (i) the exemption has been read and understood;
  - (ii) flights will only be conducted in Class G airspace;
  - (iii) flights will only be conducted at the applicable distance from aerodromes as stipulated in conditions 26 and 27; and
  - (iv) flights will only be conducted at the distance from built-up areas specified in condition 29.

(59) Any person operating under this exception shall notify the Minister within 10 working days of any change to the information provided in the above condition or upon the permanent cessation of UAV system operations.

(60) Any person conducting operations under this exemption shall report to the closest Transport Canada Civil Aviation office, as soon as possible, details of any of the following aviation occurrences during the operation of a UAV system:

- (a) Injuries to any person requiring medical attention;
- (b) Unintended contact between a UAV and persons, livestock, vehicles, vessels or other structures;
- (c) Unanticipated damage incurred to the airframe, control station, payload or command and control links that adversely affects the performance or flight characteristics of the UAV;
- (d) Anytime the UAV is not kept within the geographic boundaries and/or altitude limits as outlined in this exemption;

(e) Any collision or risk of collision with another aircraft;

(f) Anytime the UAV becomes uncontrollable, experiences a fly-away or is missing; and

(g) Any other incident that results in a Canadian Aviation Daily Occurrence Report (CADORS).

(61) Any person conducting operations under this exemption shall, following any of the aviation occurrences listed above, cease operations until such time as the cause of the occurrence has been determined and corrective actions have been taken to eliminate the risk of reoccurrence.

VALIDITY

This exemption is in effect until the earliest of the following:

(a) December 31, 2019 at 23:59 (EST);

(b) the date on which this exemption is cancelled in writing by the Minister, where he is of the opinion that the exemption is no longer in the public interest, or that it is likely to adversely affect aviation safety.

(c) the date on which an amendment to the appropriate provisions of the *Canadian Aviation Regulations* or related standards, modifying the subject-matter specifically addressed in this exemption, comes into force.

Dated at Ottawa, Ontario, Canada this 9th day of December, 2016, **on behalf of the Minister of Transport.**

(*original signed by*)

Denis Guindon
Director General, Aviation Safety Oversight and Transformation
Civil Aviation

APPENDIX C

EXCERPTS FROM THE *CANADIAN AVIATION REGULATIONS*

101.01

"model aircraft"
"model aircraft" means an aircraft, the total weight of which does not exceed 35 kg (77.2 pounds), that is mechanically driven or launched into flight for recreational purposes and that is not designed to carry persons or other living creatures; (modèle réduit d'aéronef)

[...]

"unmanned air vehicle"
"unmanned air vehicle" means a power-driven aircraft, other than a model aircraft, that is designed to fly without a human operator on board; (véhicule aérien non habité)

[…]

602.41 No person shall operate an unmanned air vehicle in flight except in accordance with a special flight operations certificate or an air operator certificate.

[…]

603.65 This Division applies in respect of the following flight operations when not conducted under Part VII:

[…]

(*d*) the operation of an unmanned air vehicle;

[…]

603.66 No person shall conduct a flight operation referred to in section 603.65 unless the person complies with the provisions of a special flight operations certificate issued by the Minister pursuant to section 603.67.

603.67 Subject to section 6.71 of the Act, the Minister shall, on receipt of an application submitted in the form and manner required by the *Special Flight Operations Standards*, issue a special flight operations certificate to an applicant who demonstrates to the Minister the ability to conduct the flight operation in accordance with the *Special Flight Operations Standards*.