



Regulatory update

Unmanned Systems Canada

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Presentation Outline

- What is the regulation, is a permit required?
- How to obtain an SFOC
- Regulatory update

Unmanned Systems Canada

- **Mission**

- To represent the interests of the Canadian unmanned vehicle systems community which includes industry, academia, government, military and other interested persons

(Unmanned Vehicle Systems include UAS, UGV, UUV, etc.)

- To promote public awareness, education and appreciation for the Canadian unmanned vehicle systems community to itself, to Canadians and worldwide

Current regulations: What is an SFOC?

- Non-Recreational operations require a Special Flight Operations Certificate (SFOC)
 - SFOC required if the operation has anything to do with work; ex: get an aerial view of how crop is growing in a field, other uses on a farm.
 - It is issued by regional offices across Canada, sometimes inconsistently, almost always slowly
 - Is free and accessible: ex: get a driver license.

How is the SFOC mechanism applied to UAVs?

- It is applied comprehensively for UAVs
 - It takes the place of regulations for personnel and licensing
 - It takes the place of regulations for airworthiness
 - It takes the place of regulations for operations and airspace
- It carries ancillary requirements, such as liability insurance

How is the SFOC mechanism applied in reality?

- Crawl, walk, run philosophy is used by Transport Canada
 - crawl = single use
 - walk = repeated use
 - run = “blanket” use
- In the absence of formal regulations, it is essential that people and organizations prove themselves to be safe and competent through documented experience
 - Professional training, properly maintained equipment, established processes are key.
 - Applicants that appreciate that this is a professional aviation activity will “run” faster, further, sooner. Learn to speak Aviation.

What is the alternative to an SFOC?

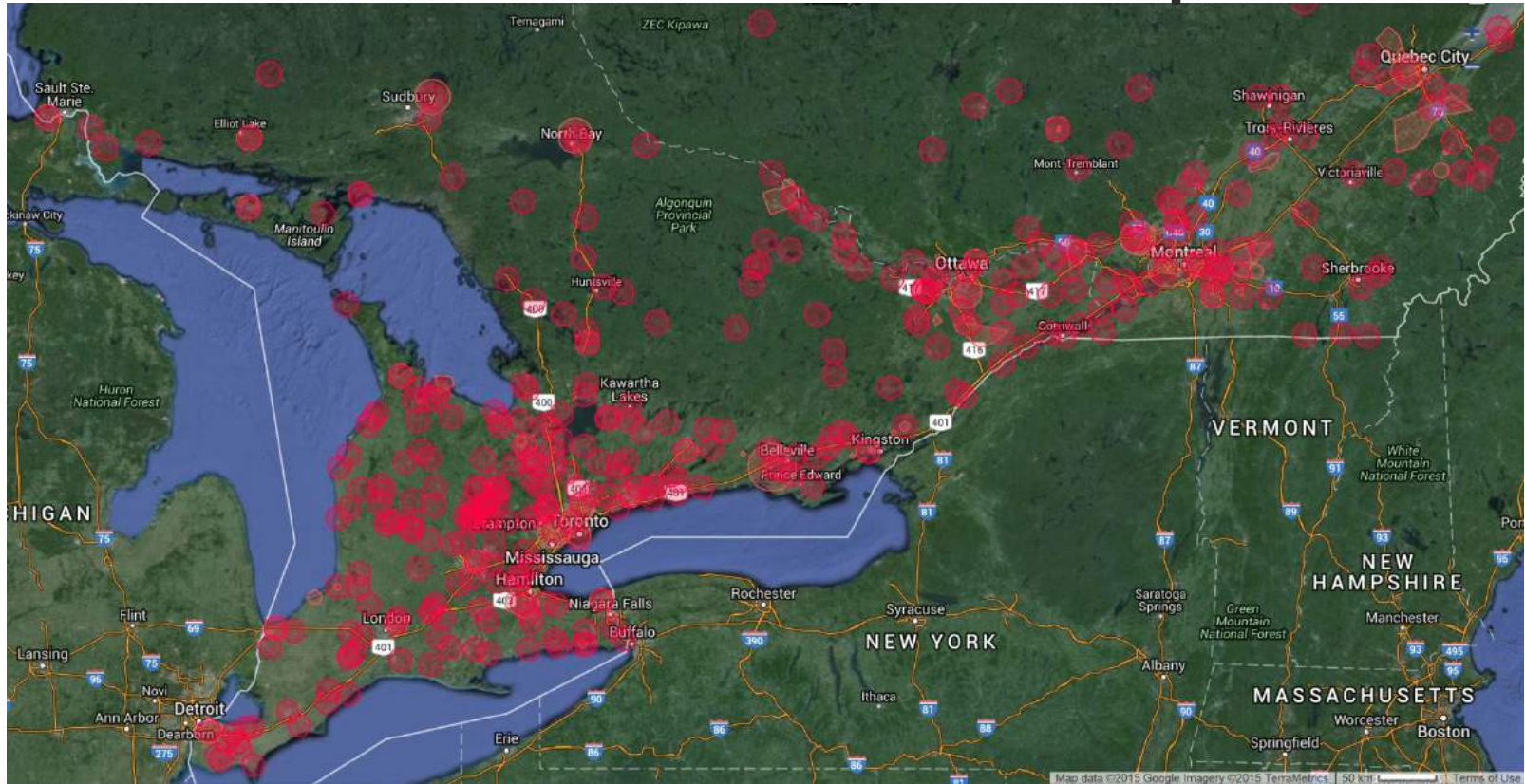
- You can operate under an Exemption, if you can meet *all* of the conditions
- There are two options:
 - Less than 2kg MTOW (*~37 conditions must be met*)
 - <http://www.tc.gc.ca/civilaviation/regserv/affairs/exemptions/docs/en/2880.htm>
 - 2-25kg MTOW (*~58 conditions must be met*)
 - <http://www.tc.gc.ca/civilaviation/regserv/affairs/exemptions/docs/en/2879.htm>

What are some of the main Exemption conditions?

Key Conditions as of Nov 27, 2014

"Lowest Risk" Operation 37 Conditions	"Minimal Risk" Operation 58 Conditions
UAS under 2 Kg MTOW	UAS between 2 and 25 Kg MTOW
Liability Insurance of at least \$100K	Liability Insurance of at least \$100K
Daylight, Good Weather	Daylight, Good Weather
Continuous, unaided visual contact	Continuous, unaided visual contact
At or below 300 ft. at all times	At or below 300 ft. at all times
Class G airspace	Class G airspace
Not within 5 nm of: Forest Fires, Airports, Built up Areas	Not within 5 nm of: Forest Fires, Airports, Built up Areas
Not within 100 ft. of people, things	Not within 500 ft. of people, things
Trained in conformance with TC Guidance Material	Pilot Ground School training + Trained in conformance with TC Guidance Material
Pilot must be 18 yr. old (special case for 16-18)	Pilot must be 18 yr. old
	Operation Reports via Email to TC

Do exemptions work?



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...and If I don't comply?

- **Failure to have the proper authorization**
 - Individual Fine up to \$5,000.00
 - Company Fine up to \$25,000.00
- **Failure to comply with issued authorization**
 - Individual Fine up to \$3,000.00
 - Company Fine up to \$15,000.00
- **Unauthorized operation within a restricted area**
 - Individual Fine up to \$25,000.00 and up to 18 months in jail!
- **Hazardous operation of a UAV or model aircraft**
 - Penalties as defined in court!

How to apply for an SFOC

- 1) Become familiar with the regulation: Tc.gc.ca/safetyfirst
- 2) Have UAV ops liability insurance and landowner permission
- 3) Contact the appropriate TC administrative region:
 - British Columbia: CAOPac-OACPac@tc.gc.ca
 - Prairies and Territories: PNRspecialflightops@tc.gc.ca
 - Ontario: caso-saco@tc.gc.ca
 - Québec: csva-vsca@tc.gc.ca
 - Atlantic: CASA-SACA@tc.gc.ca
- 4) Obtain and complete the *Checklist* and submit all documentation.

Staff instructions (extract)

- **8.1 623.65(d)(3)(a)**
- ***"The name, address, and where applicable, the telephone number and facsimile number of the applicant."***
- The Certificate applicant must provide their name, address, telephone and facsimile numbers, and any other pertinent contact information (e.g. email address).
- As applicable to manned aviation, the Certificate applicant must be the individual/organization that has possession of the UAV system as owner or lessee. This person or company has complete responsibility for the operation and safety of the UAV flight operation and responsibility for compliance with the conditions contained in the SFOC.
- It is essential that the UAV operator is aware of the responsibility to ensure that the UAV operation is conducted in such a way that the safety of persons and property on the ground and other airspace users is not jeopardized.
- **8.2 623.65(d)(3)(b)**
- ***"The name, address, and where applicable the telephone number and facsimile number of the person designated by the applicant to have operational control over the operation (Operation Manager)."***
- ...



- 2015 Ski world cup, Italy
- Hiring a service provider, or flying by yourself on the farm, SFOC and insurance are required.

Recent accidents

Toddler's eyeball sliced in half by drone propeller

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Amy Roberts said her son's injured eye was "the worst thing she had ever seen"

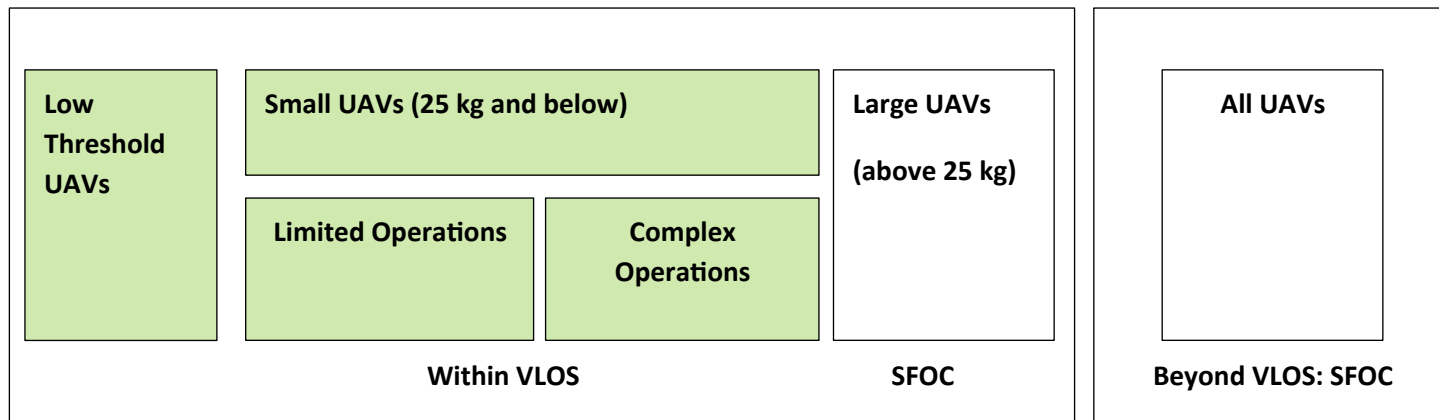
An 18-month-old boy has lost an eye after being hit by a drone flown by a family friend.

Near-future regulations

- Transport Canada issued 345 SFOCs for UAVs in 2012
 - ...945 SFOCs in 2013
 - ...1,672 SFOCs in 2014
 - This represents an overall increase of 485% over two years.
-
- *Transport Canada has been directed by the Minister to have regulations in place by 2016, to replace a substantial base of operations currently addressed by SFOCs.*

Near-future regulations: up to 25kg, operated within visual line-of-sight

The following structure was recently opened to public comment as an NPA



Proposed regulations for Complex Operations

- Licensing: Pilot Permit or endorsement/grandfathering on an existing license
 - Would require a ground school for knowledge base
 - Would require flight / operations training and testing
- Systems: Complex operations implicate a higher standard of reliability to achieve lower risk
 - Manufacturers would self-certify that systems conform to certain functional and safety requirements
 - Operators would be limited in the maintenance and modifications they could do themselves
- Operations: Processes would need to be in place
 - TC would want to see documented processes for training, SOPs, maintenance, airspace etc.

Notice of Proposed Amendment (summer 2015)

	Very Small UAVs	Small UAVs (Limited)	Small UAVs (Complex)	
Aircraft Requirements				
Identification	✓	X	X	<i>Identification, and marking and registration requirements are intended to assist accident and enforcement investigations.</i>
Marking and Registration	X	✓	✓	
Design Standard	X	✓	✓	
Pilot Requirements				
Age Restrictions	X	✓	✓	<i>Basic knowledge is required to operate a UAV safely. Depending on the level of risk the aircraft and operation poses, different regulatory requirements will apply.</i>
Knowledge Test	✓ (Basic)	✓ (Basic)	✓ (Advanced)	
Pilot Permit	X	X	✓	
Medical Certificate	X	X	✓ (Cat 4)	
Respect for Privacy and Other Laws	✓	✓	✓	
Permission to Fly				
At night	X	X	✓	<i>The regulatory requirements will allow low risk operations in complex environments or conditions when the risk of the operation is mitigated through other pilot or aircraft requirements.</i>
In proximity to an aerodrome	X	X	✓	
Within 9 km (5 nm) of a built-up area	✓	X	✓	
Over people	X	X	✓	
Liability Insurance	X	✓	✓	
Operator Certificate *	✓	✓	✓	

...and lastly...not-so-near-future regulations

- Regulatory recommendations for operation beyond visual line-of-sight (BVLOS) have already been created by the joint technical working groups
 - This is completed as of 2015

- Flying the aircraft yourself, or hiring a service provider, ensure SFOC and insurance are in place! It is accessible.

- More information:

<http://tc.gc.ca/SafetyFirst>



Learn More!



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Annual Conference: November 2016
Edmonton Westin
<http://unmannedsystems.ca>