



PART IX - A SUMMARY REFERENCE OF NEW UAV RULES (VER 2.2) with notes by D Cooke inskyphoto.com

These rules came into force in Canada 1JUN19 (see INTERPRETATIONS last page)

DIV I GENERAL - SMALL REMOTELY PILOTED AIRCRAFT. ie: between 205grams and 25 kilos

901.01 These rules apply to Small Remotely Piloted Aircraft Systems (RPAS-sRPAS) Minister will approve is applicant qualified

DIVISION II - REGISTRATION

901.02 All small RPAS have to be registered and you must have the certificate with you during ops 901.09 (More details 901.01)

901.03 Registration to be clearly visible on the a/c (901.05 gives details of how)

901.04 (1) To register an a/c you must be Canadian Citizen, Permanent Resident or Fed, Prov or Muni gov't Agency

901.04 (2) Owner must be 14 yrs or older to register a UAV/RPAS

901.5 Registration data required (Long list look it up) reg certificate includes if MFG has made declaration (901.76)

901.06 Minister to maintain a database of owners and 901.05 reg numbers

901.07 Owner must notify Transport Canada in writing (within 7 days) if

901.07 (1) Destroyed, stopped using it, missing >60days or gave up looking, or transferred ownership

901.07 (2) If any of that happens your registration is cancelled - New owner must re-Register

901.07 (3) Registration cancelled if: Registered Owner becomes unqualified, dies, Company dissolved, acquired or bankrupt

901.07 (4) Note: if you have responsibility for the Ops & Maint . . You are considered "the owner"

901.08 Notify Minister in writing with 7 days, if you change name or address of owner

901.09 You must have registration certificate accessible during operations

DIVISION III - GENERAL OPERATING AND FLIGHT RULES

901.11 PIC or OBS must have UAV visual at all times (VLOS) unassisted except prescription glasses (ALL BVLOS you must have SFOC)

901.12 no flying over or within Police Fire rescue Security perimeter (unless approved by the ops commander)

901.13 Can't leave Domestic Airspace ie cross a border like Canada/US (Note: there's over 5000miles of that in Canada)

901.14 Can't fly in controlled airspace unless specifically authorized by ATC or person ID'd in Designated Airspace Handbook

901.15 notify ATC or airspace authority (FIS) if you violate controlled airspace inadvertently or are likely to

901.16 Stop operations immediately if anyone is or likely to be in danger

901.17 always give way to all other manned aircraft, balloons, gliders . . . everyone

901.18 STOP if there is any risk of collision with any other aircraft

901.19 No sick or tired or unfit crew allowed

901.19 (2) >12hrs since Alcohol or under influence of impairing substance (prescribed or other)

901.20 (1) ANY/ALL Observers used must have clear communications with PIC at all times

901.20 (2) Observers MUST communicate hazards to PIC in a timely manner

901.20 (3) Observers only monitor 1 UAV at a time see 901.40(1) or get an SFOC (903.03)

901.20 (4) Observers cannot observe while driving vessel vehicle of other aircraft (PIC 901.37)

901.21 Crews must obey the PIC instructions during flight

901.22 no living creatures on board UAVs . . (not even a cockroach)

901.23 These procedures mandated for all flights - be familiar with before take-off 901.24

Preflight Take-off Launch Approach Landing Recovery

Controller failure, Equipment failure, A/c Failure, C2 Loss, Fly-away, Flt Termination

Refer to MFG procedures, They must reflect above instructions

901.23 (3) No take-off without crew reviewing checklist/procedures that is available to PIC

901.23 (4) No operating UAV unless IAW established procedures

901.24 Don't start without knowing available info needed for the flight

901.25 Stay below 400ft AGL MAX - you can go 100 ft over bldgs/structures if <200ft horiz

901.25(2) otherwise get an SFOC see (903.03)

901.26 Fly >100ft away from anyone except crew or actors (no overflight AT ANY ALTITUDE)

901.27 Site Survey must be done, including

Type of Airspace (CLASS) - Define boundaries physical and electronic (GeoFence)

Evaluate Altitudes (AGL) Approach and Departing routes

Check distance from manned A/c ops, airports, heliports and other aerodromes

Locate and note height of obstacles towers ,bldgs, masts, wires, cell towers, wind turbines and obstacles etc

Check forecast weather conditions at planned time - (and do a local weather check before you fly)

Evaluate distance from any bystanders who are NOT crew or actors

901.28 ensure enough fuel or energy for the flight

PIC to ensure everyone knows their role and has been briefed including emergency equipment

what's max distance the A/c can travel without endangering aviation or others

901.29 PIC to ensure a/c is serviceable, & maintained IAW MFG instructions and equip is installed properly & serviceable

901.30 Manuals must be available to PIC and Crew members on site (print or electronic form)

901.31 Must fly IAW MFG instructions (like no high winds, rain, prohibited maneuvers, check the manual)

901.32 No autonomous flight unless PIC can take control at any time

A/c - Aircraft (all kinds UAV or normal)
ACK - Acknowledge (like a clearance)
AGL - Above Ground Level
ATC - Air Traffic Control
BVLOS - Beyond Visual Line Of Sight
C2 - Command and Control
CFS - Canada Flight Supplement
ELT - Emergency Locator Transmitter
IAW - In Accordance With
MOD - Any modification of the "system"
MFG - Manufacturer's
NVG - Night Vision Goggles
PIC - Pilot In Command
RPIC - Remote PIC (I just threw that out there)
RPAS - Remotely Piloted Aircraft System
(includes UAV and CTRLR)
sRPAS - Small RPAS (between 0.25-25kg)
SAFE - Complies with Standard 922 (DRAFT)
SFOC - Special Flight Operations Certificate
SOP - Standard Operating Procedures
SI - Staff Instruction (see No. 623.001)
STD921 - RPAS Operator Review Standard (TC)
STD922 - RPAS Safety Assurance Std DRAFT (TC)
TP15263 -Small RPAS Knowledge Req's (TC)
TC - Transport Canada
UAV - Unmanned Areal Vehicle (drone only)

- 901.33 No take-off launch approach or land unless site is safe and no likelihood of collision with anything
- 901.34 Weather condition at planned time must be IAW MFG instructions/limits and ALWAYS VLOS
- 901.35 No flying in icing or potential ice without anti-ice, de-ice or ice detection equip
No frost, snow or ice on any a/c surface
- 901.36 don't fly formation or in proximity with another aircraft unless pre-arranged between pilots
- 901.37 no fly while driving any other vehicle/vessel or A/c at the same time
- 901.38 no FPV unless observer provides detect & avoid VLOS and any can observe conflicting hazards
- 901.39 no Night FPV without nav lights ON and visible both with or without assisted NVG
- 901.39 (2) Don't fly with NVG unless PIC or OBS have other means to detect full visible light spectrum
- 901.4 no operating multiple a/c from one controller unless IAW MFG instructions
- 901.4 (2) no operating more than 5 UAVs except under SFOC
- 901.41 Need SFOC for "advertised outdoor event" - public gathering concert, sports event, market or festival etc
- 901.42 no HANDOVER of PIC unless prearranged & risk analysis and procedures followed to minimize CTRL loss
- 901.43 no ops carrying anything that creates a hazard or can injure people or animals or GET AN SFOC
NO explosives, corrosives, flammables, biohazard, weapons, ammo or "war equipment" (look it up)
- 901.44 don't activate flight termination if it can cause a further hazard or endanger aviation safety or anyone
- 901.45 No ELT allowed on UAVs
- 901.46 No flying in transponder space without transponder and pressure altitude equipment
- 901.46 (2) You CAN fly (in Transponder Space) if you request & ATC gives clearance (and you ACK) BEFORE entering
- 901.47 no fly if UAV may interfere with the established traffic pattern (Ref CFS or WAS water aerodrome supplement)
- 901.47 (2) STAY AWAY >3 nm from center of an airport >1nm from heliport center (unless Advanced Certificate and Clearance) 901.62
- 901.47 (3) NO less than 3 nm from Military aerodrome or get an SFOC issued under 903.03
- 901.48 (1) You have to keep Flight Records -names, dates, times and crews for each flight
(b) Maintenance Records - names dates of actions taken, for MODS MFG name, model, part name installed
Keep any instructions provided for the work done (NOTE: It's the Part's MFG instructions they want, not the MFG of the UAV)
- 901.48 (2) Flight records must be kept for 12 months, maintenance records 24 months (from the day the record was created)
- 901.48 (3) If you sell your system you must transfer ALL past 24 months of 901.48 1(b) maint records to new owner
- 901.49 STOP ops if any following happens until analysis of cause and corrective/mitigation action is taken to correct
Unintended UAV contacts with any person, especially if injury requires medical attention (**SEE NOTES Pg4**)
Unanticipated damage to UAV - adverse control response or flight characteristic
a/c exceeds geo-fence or planned distance or altitude (apparently you can intentionally CRASH one, no report)
if UAV becomes uncontrolled - fly-away or is missing, collides with or is at "RISK" of collision with another a/c
Also, if there is a police report or Civil Aviation Occurrence Report filed by you or anyone else, you file
- 901.49 (2) Keep analysis of any 901.49 for 12 months after the date any record is created (make them avail to Ministry)

Document Set
(Hard or Soft copy)
REQUIRED (on-site)
Small RPAS Registration
RPAS Manual
PIC Cert & Logs (recency)
Site Survey
Proof of Insurance (if Apl)
Property Permission
Checklist (incl Emerg)
RPAS Ops Procedures

OPTIONAL
Company SOPs
Company Training Manual
Training Records

EQUIPMENT

DIVISION IV - BASIC OPERATIONS

- 901.53 The following (Blue area) is for ALL OPS other than advanced ops per 901.62 (a) thru (d)
- 901.54 Must be >14 yrs old, hold a BASIC or ADVANCED Small RPAS VLOS (TP15263 based on STD921)
under 14 PIC can fly if supervised by someone who has BASIC 901.55 or ADVANCED 901.64
- 901.55 Minister will issue certificate if you are >14yr old and pass the appropriate exam
- 901.56 Every 24 months - write/pass either certificate or a Flt Review or any one recurrent training in STD921.04 prior to flight
- 901.56 (2) you must keep 24 months of records showing you have met recency requirements
- 901.57 MUST have Small RPAS certificate and a logbook with you when flying to document recency
- 901.58 Don't copy exam questions, help or accept help during exam or complete any question for someone else
- 901.59 Wait 24hrs before re-taking failed exam

DIVISION V - ADVANCED OPERATIONS **SEE IMPORTANT INTERPRETATIONS Pg5.**

- 901.62. Advanced Ops needs MFG Declaration 3 areas - Controlled airspace 901.71-72 - Ops <30m but > 5m 901.69(1)(a) - <5m (1)(c)
<100ft(30m) but >16.4ft (5m) from people, except crews and actors (see 901.69 +MFG declaration)
For <16.4ft (5m) your UAV MFG must declare it meets Standard 922 for any/all the 3 names operations 901.69 (a) (b) (c)
Flight <3nm airports and <1nm heliports centers must be IAW 901.73 (Any airport needs published procedures)
- 901.63 PIC must be >16yrs, hold SRPAS ADVANCED VLOS Certificate or under Flight Review or supervised by Advanced holder
- 901.64 Minister will award SRPAS ADV if >16yrs, has passed ADV Exam (80%) and Flight Review <12months from application
- 901.65 Recency req'mts for ADVANCED Certificate. Within 24 months prior to any flight you must:(with records)
be issued sRPAS ADV Cert, pass that exam or pass a Flight Review or show recurrent training was done per 921.04
- 901.66 MUST have at least, SRPAS ADV (VLOS) Certificate, Flight Logs, and/or recency documentation on-site of flight (see doc set)
- 901.67 Don't cheat on exams - don't do anything in 901.58
- 901.68 Wait 24 hrs for retest after failed Flight Review
- 901.69 (1) Except (901.69(2)).You cannot fly without your UAV Reg Cert showing MFG Declaration of 901.69(a) (b) and (c);
- 901.69 (1) (a) Controlled airspace
(b) <100ft (30m) Horiz from public but >16.4ft (5m) except own crew or actors,

(c) <16.4ft of anyone per (901.69(2)) - but not overhead AT ANY ALTITUDE

(2) Grandfathered a/c designated "compliant" prior to 1April19 treated as MFG declared (SI 623.001)

901.7 Can't fly any modified RPAS unless YOU can demonstrate compliance with Standard 922 RPAS Safety (But HOW?) and MODs Must be done IAW the part MFG instructions (ie: MFG of the MOD not the UAV MFG)

901.71 Flight in Controlled Airspace - You must request ATC with date, time and duration of ops plus the following:

UAV Category, Reg # and physical characteristics of a/c

Vert and Horiz boundaries of area of ops (GeoFence) + Flight Route to access the area

Proximity to manned flying ops approaches, departures and traffic pattern

Name contact #'s and RPAS certificate # for PIC

Means of 2 way COMM with ATC - Lost Link and fly-away procedures

Emergency Procedures incl process and time needed to terminate ops + **Anything else requested by ATC**

901.71(2) In controlled airspace, you CAN fly higher than 400ft AGL if ATC approves (*NOT LIKELY*)

901.72 You must acknowledge and follow ALL ATC instructions in controlled airspace

901.73 <3nm airports and <1nm heliports centers you must follow **THAT** aerodrome's RPAS published procedures

HINT: Few if ANY Control Zones actually have any published RPAS procedures yet (as of April 2019)

DIVISION VI - ADVANCED OPERATIONS - MANUFACTURERS

901.76 No advanced Ops without MFG declaration (except grandfathered under Compliant A/c)

901.76 (2) MFG MUST: declare MFG Name , Model, max. t/o weight, Category (fixed rotary lighter-than-air) and say it declares documentation req'mts of (901.78) and meets Standard 922 for 901.69(1) ops
Declaration is invalid if Ministry says it does not meet Standard 922 or if MFG notifies the Ministry

901.77 MFG must notify Ministry ASAP if it's a/c fails to meet Standard 922

901.78 MFG must give every owner (publish)

Servicing and Maintenance instructions and inspections program/procedures

A manual with range or weight & balance limits for safe ops and any mandatory actions needed

Modes of operation for each phase of flight, safe operating limits and emergency conditions

Weather effects and impact on performance

Design features to prevent injury to anyone

Warning information against unsafe operations

Standard Operating Procedures (SOPs) for normal and emergency ops

Assembly and adjustment procedures

901.79 A declaring MFG shall keep records of all mandatory actions and how they verified meeting STD 922 for 2 years from date of manufacture of that model or for the life of any component

DIVISION VII - REQUIREMENTS RELATED TO FLIGHT REVIEW

901.82 Flight Reviewer must hold ADVANCED cert endorsed for Reviewer under 901.83 and be affiliated with a training provider (921.05 Standard 921)

901.83 Minister will issue Reviewer Certificate if:

>18 yrs old holds ADVANCED Cert per (901.64) and meets recency (901.65) for at least 6 months before application

Passed Reviewer's exam >80%

901.84 Reviewers should not cheat on exams per 901.58

901.85 Reviewer candidates wait 24 hrs. for retest

901.86 Schools must submit Reviewer names to Ministry, ensure they adhere to 901.87 and changes within 7 days

901.87 All reviews done IAW AGE 901.56(1)(b)(ii) Review in past 12 month 901.64(c) and 901.65 (1)(b)(ii) to Standard 921

Subpart 3 - SPECIAL FLIGHT OPERATIONS

903.01 Operations need SFOC (903.03) for ANY of the following (Needs 30 WORKING days notice to apply for SFOC) ~6 Weeks
>25kg, BVLOS, Foreign Operator, >400ftAGL, >5 UAV from 1 controller, Any special aviation or advertised event
Hazardous payloads (901.43(1)), or less than 3nm from Military installations (901.47(3))
Anything else the ministry wants to cover

903.02 Application for SFOC includes

legal name , trade name, addr and contact #'s of applicant

PIC Contact means during OPS

Operations description and purpose with dates/times plus alternates

Manufacturer, model, description with photo or 3 view drawings of a/c, + performance, Ops limits, & equipment

Safety plan for proposed area with emergency contingency plan

Mission plan fully describing the operation

PIC Name, cert#, License #, permits and qualifications of crew members including maintainers

Systems Maint Instructons, Weather minimum for ops and ATC traffic coordination is needed

Collision avoidance methods, normal SOPs and emergency procedures,+ Anything else the Minister wants

903.03 Minister will issue SFOC with above info - if you show ops won't adversely effect aviation safety or other people

IMPORTANT INTERPRETATION NOTES

DEFINITIONS	2 key definitions are worded poorly (imprecisely)
Should be Reworded	<p>Flight termination system means a system that, on activation, terminates the flight of a remotely piloted aircraft.</p> <p>Flight does not "terminate" particularly in Fixed Wing. Only control is "Terminated". May glide quite far or fall ballistically to impact</p> <p>fly-away means, in respect of a remotely piloted aircraft, an interruption or loss of the command and control link such that the pilot is no longer able to control the aircraft and the aircraft no longer follows its preprogrammed procedures or operates in a predictable c planned manner.</p> <p>"Fly-away" is more often human error than system failure. The a/c is still flies its preprogrammed procedure and WILL continue flying in a predictable . . . but unplanned manner. Better to say "no longer follows the intensions of the operator." Simpler for all cases Usually, a fly-away is following the last command or procedure the a/c received . . . just not the operator's intensions.</p> <p>C2 signal loss is a rare hardware failure, usually operator error or interference unknown to the operator. Flight path is still predictable</p>
DECLARATION	<p>Not just 1 but 3 separate advanced ops - MFG's USE CASE declaration is required to be specifically listed on EACH UAV Reg.(a)(b)(c)</p> <p>If your UAV Reg only lists only "control zones" (a) then you still can't operate <30m or <5m or overhead (b) (c)</p> <p>AC 922.001 Sect 7.0 says All MODs must be done IAW MFG recommendations, so few if any 3rd party MODs will ever qualify</p> <p>Generally no Quad is allowed overhead because loss of 1 engine is catastrophic and unrecoverable and someone gets hit on the head</p> <p>Otherwise you are limited to BASIC ops without each USE CASE being listed on your UAV Registration Certificate</p>
MODIFICATIONS	<p>Declaration of 922 by MFG or MOD is a simple 1 min on-line form but an onerous commitment to it's 82 pages of requirements</p> <p>Declaration of 922 is simple but comes with huge liabilities such that few if any MOD builder will do it (see 922 Sect 4.0)</p> <p>If you do the MOD yourself you accept "the same obligations of the MFG" 922 Sec 7.0 (3) (Serious liability implications)</p> <p>Does a 3rd Party "Payload" count as a MOD? Probably if MFG has not tested it as part of it's declaration</p>
OVERFLIGHT	<p>Where the PART IX talks about No getting closer "AT ANY ALTITUDE" it should be interpreted that you cannot fly overhead any closer than the horizontal standoff specified, so consider standoff as a "Vertical Cylinder" as high as the radius</p> <p>This means the 901.62 (b) MFG Declaration allows NEAR people but you need 901.62(c) on your UAV Reg for OVER people</p>
ACCIDENT	<p>901.49 If anything odd or unexpected happens like contact any thing or person, ops must STOP and not resume until investigated And resolved and not resumed until corrective action is implemented</p> <p>However, if you claim it was intentional then ops can continue and no report is required unless there is injury or report filed by Police, Fire rescue or anyone files an Air Incident Report - Maybe you were filming a "HOW NOT TO video"</p> <p>No report needed if the collision with a boat, car, building or outhouse if it's "anticipated"?</p> <p>Technically anything else you hit is anticipate just moments before it hits - no report required. We only care about aircraft and people</p>
NO DECLARATION	<p>901.62 is where all the action is since it brings in 922 standards, declarations and MODs and all that. . .</p> <p>Para 901.62 it seems is the ONLY Advanced ops when special restrictions apply Control Zones, close to and over people</p> <p>To me it reads that you aren't prevented from any Commercial Ops "DIV V Advanced Ops" . . . anywhere . . .</p> <p>There seems to be the ONLY 3 special cases where Manufacturer declarations are required.</p> <p>EXCEPT Control Zones, near airports or closer than 100ft from anything (which is a lot but workable for many tasks)</p>