SAFETY PRESENTATION NOTES
FOR AVIATEURS QUÉBEC
CLAUDE ROY, CHALLENGE AVIATION INC.
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SPRING RUST REMOVER – AN ULTRA-LIGHT PERSPECTIVE

Flying is safe, but humans don't manage flying very well
Flying is rendered unsafe because of humans entering the mix
- We don't know all we should know
- We don't do all we should do
- We ignore things, we forget things, or we become complacent

If we cannot fly all year long…
We definitely need to prepare at the start of every new flying season
- Not just a question of spring
- Any period of inactivity must lead to some "cleaning" and "refreshing"

Differences between General Aviation (GA) aircraft and ultralights
- Ultralight smaller and simpler
  - Their lighter weight makes them very bouncy in the air
- Ultralights not certified, all different from one another
- Usage of ultralights more seasonal
- Architecture more open to seasonal dwellers/critters
- Two-cycle engines
- Maintenance done by owners/operators

To have a great start for the season, you need to have…
A good aircraft
- Good storage conditions
  - Inside storage
    - Without critters and other seasonal tenants?
    - Are you the only plane in the hangar?
      - Possibility of airplane being moved during your absence
      - Another person may have touched your airplane
  - Outside storage
    - It is bird nesting time!
- Good structure
  - Check the whole plane
    - All tapes and covers off the vents
  - Any new ADs, service bulletins or manufacturer recommendations?
  - Use a flashlight to look inside every little space you possibly can
  - Check control cables and connections
  - Check aileron hinges, pushrods and bell cranks
  - Check all bolts, nuts, fasteners and cotter pins
  - Check for any wear, rubbing or chafing
  - Install/change/remove the cabin heat system
  - Inspect the landing gear set up
    - Gear legs and cables

- Tire quality and pressure
- Rims and bearings
- Axles and welds
- Brakes, cables and their adjustment

- No complacency, distractions or interruptions
  - Now is not the time to forget to finish up something

Good engine

- Review your engine service logbook
- Sort all unresolved issues from your last flight
- Use the engine manufacturer's maintenance book as a guide
- For storage, the engine should have been
  - Fogged during the winter
  - Exhaust plugged
  - Air filter covered
- Make sure
  - Battery re-installed and checked
  - Air filter cleaned and safety wired
  - Magnetos visually checked
  - Spark plugs and spark plug caps checked/replaced
  - All fluids (gas, oil, coolant) checked/replaced
  - Fuel system checked
    - Tank(s), gas lines, pump, vent lines, etc.
  - Fan belt checked/replaced
  - Throttle and choke cables checked/adjusted
  - All exposed engine/electrical wires checked
    - Firmly connected
    - Not frayed or worn
  - All rubber components checked
    - Carburetor intakes
    - Seals
    - Motor mounts

Good fuel

- Metal vs plastic tanks
- Old fuel?
  - Ideally, airplane was put away with tanks full of 100LL
    - Very stable fuel, can last up to two years
    - Full tanks reduce the moisture that condensate in them
    - Full tanks minimize cracking of fuel tank rubber parts
  - If you did, you're good to go
- Old automotive fuel in the tanks?
  - Auto fuel (Mogas) does not last very long, about two months
    - Octane level evaporates quickly
  - Ethanol in the fuel?
    - Ethanol absorbs water
    - Ethanol is a solvent
    - Ethanol starts separating from gasoline over time

- Not good for pre-mixed two-stroke engines
  - Oil bonds to the gasoline
  - Water bonds to ethanol
  - Uneven burning and uneven lubrication
- Ethanol-free fuel
  - Shell v-Power
  - Costco 91
  - Canadian Tire 91
  - Check with www.pure-gas.org
- Oil in the fuel?
  - Pre-mixed (usually 50:1 ratio)
  - Oil injection system
  - Separate oil pan or container (four-cycle engine)
- Cure: drain and replace with clean, fresh, properly mixed auto fuel
- Dirty fuel
  - Cure: drain and flush
- Dirty tank
  - Cure: drain and flush
- Dirty fuel filter
  - Cure: change the filter
- Good carburation
  - Float bowls and gaskets
  - Clean air filter
  - Jet and jet needle checked for proper seasonal set-up
  - Carburetor synchronization
  - Proper idle speed
  - Carburetor heating (carb heat) systems
    - Rare on ultralights with two-cycle engines
    - Make sure it works
- Good propeller and transmission
  - Propeller inspected, balanced and safety wired
  - Gear transmission oil
  - Belt transmission bearings and belt surface cracks
  - Belt tension good and belt tensioner system secured
- Good overall maintenance program
  - Annual inspection done for the new year
    - Follow the airplane and engine manufacturers' inspection sheet
  - Time to do last year's list of repairs and maintenance
  - Experimental Aircraft Association (EAA)
    - Excellent source of information on building and maintenance
    - https://eaa.org/Videos/Webinars
    - Some for members only, most of them available to the public
    - Ultralight section available (90+ videos)

A good pilot

- Healthy pilot
  - Medical up to date

- 60 months (5 years) for the Pilot Permit Ultra-Light (PPUL)
- 24 months for the PPUL for passenger carrying is 40+ years old
- New electronic process through your Canadian Air Medical Examiner (CAME)

COVID-19 issues
- No restriction on personal flying
- Maintain the usual COVID restrictions
  - Wear a mask
  - Maintain 2 meters from each other
  - Sanitize regularly

Legal and current pilot

Compliance to rules and regulations
- Our brain forgets
- Difficult to stay recent with rules and regs
- https://tc.canada.ca/en/aviation/licensing-pilots-personnel/staying-current-proficient-pilot

Annual Airworthiness Information Report (CAR 501.03)
- Aeroplane-specific requirement
- Ultralights are exempted
- Owners of aeroplanes being flown as ultralights by holders of PPUL are NOT exempt of this requirement
- To be submitted by 30 March for the previous flying year

Paperwork updated
- Aircraft registration
  - Issued with the current owner's name on it
- Certificate of Airworthiness (or Special C of A)
  - Not required for ultralights
- Aviation Document
  - Check the expiration date on it
- Pilot Licence or Permit
  - Expiration date: is it good for the whole year?
- Medical certificate
  - Start the renewal process early
- Insurance
  - Plane and hangar
  - Covered now and for your whole flying season?
  - Type of coverage adequate for the coming season

Sharp pilot

Familiarity with the equipment
- Cockpit switch-ology
- Review the important airspeeds
- Remember the temperatures on the CHTs and EGTs
- Review your weight and balance
  - Has anything changed from the last time?
- Forced migration towards the digital world
- Electronic Flight Bag (tablets, phones, GPS, ADSB receivers, etc.)

- How they are built
  - Sometimes well built, sometimes not
  - Low-end consumable items enter the mix
- How they are attached/held in the cabin
  - Sometimes solidly held, sometimes not
  - Can become a projectile in an accident
- How they function
  - Battery life
  - Overheating
  - Software to learn and keep up to date
  - Software to operate under stress

Good training

- Transition from a GA to an ultra-light aeroplane
  - Differences between the two types
  - Adequate transition needed
  - Appropriate training required
- Transition from on type of ultralight to another
  - All sorts of ultralights
    - Multi-axis, trike, paramotor, etc.
    - Side-by-side or tandem seating
    - Open or enclosed cabin
    - Two-cycle of four-cycle engine
    - Seasonal landing gear
    - Tail dragger or tricycle gear
    - Controls to the left, to the right or in the center
    - Etc.
  - Safe transition is essential
  - Appropriate training may be required

Good flight preparation

- Planning is required
  - If you fail to plan, you plan to fail
- Pilot is OK today?
  - I - Illness
  - M - Medication
  - S - Stress
  - A - Alcohol
  - F - Fatigue
  - E - Emotions
- Is this airplane yours?
  - Rental plane may require additional preparation
- Have not flown in a while?
  - Flight with an instructor to start the season
- Minimal and dispersed flying hours during the year?
  - Flight with an instructor to get/stay sharp
- Change of aircraft performance from one season to another
- NOTAMs to be checked

- Changes since the last time?
- Maps and Flight Supplement updated
- Flight databases updated
- Aeronautical Information Manual (AIM) reviewed

Good decision-making abilities

Review the main sources of aviation safety material

- Transport Canada Aviation Safety Letter (TP185)
- https://tc.canada.ca/en/aviation/publications/aviation-safety-letter
- Transport Canada General Aviation Safety Campaign (GASC)
- https://www.tc.gc.ca/en/campaigns/general-aviation-safety.html
  - Better pilot decision-making
  - Staying current and proficient as a pilot
  - Best practices for General Aviation and Ultralights
    - Transport Canada Ultra-Light Working Group
    - Ultra-Light Best practices
      - Cross-country flight
      - Maintenance
      - Operations
      - Test-flying
      - Etc.
- https://tc.canada.ca/en/aviation/general-operating-flight-rules/best-practices-general-aviation
  and
- https://tc.canada.ca/en/aviation/publications/aviation-safety-letter/issue-1-2020/ultralight-safety-new-best-practices-guides-now-available
- Smart Pilot
- www.smartpilot.ca
- Canadian Owners and Pilots Association (COPA)
- www.copanational.org

Preparation for emergencies

- Engine has not worked for months: potential problems
- Be mentally ready for the engine to quit
- Ultralights fly slow, but react very fast
- If you have time for only one thing…
  - Lower the aircraft nose to keep your flying speed up

A good environment

Good airfield conditions

Runway selection and condition

- Density altitude
  - Altitude not too high
  - Temperature not too hot
- Type of runway
  - Snow or ice
  - Firm or soft
  - Rocky

Grass strip
High grass?
Sufficient drainage?
Wet or standing water?
Runway uneven?
Runway contaminated?
Runway slope to consider
Abort points to determine
Good engine ground run
Tie the tail of the aircraft securely
Fully warm up the engine
Operate the engine at full RPM for three to five minutes
Shut down the engine and allow it to cool
Check for any fluid leaks
Check for parts shaken loose during the ground run
Check muffler, muffler mounts and muffler springs for cracks
Log any observations in your service log
Good local flying conditions
Local traffic
Weather briefing
Winds
Thermal activity
Carburetor icing
Temperature around the freezing point?
Mechanical and thermic turbulence to expect
Good first flight of the season
Passenger with you?
Bad idea, not on the first flight of the season
Make sure you use your checklist; it's been a while…
All items secured in the cabin
If not, they may be projectiles
Stay in the circuit
A few take offs and landings
Stay close to the circuit
A few turns and stalls
Stabilized approach
With as few changes as possible
A good, stable approach leads to a good landing
Approach does not feel right? Go around and try again
Good landing
Most airplane accidents are landing accidents
One last job to do
Verify everything after the landing
Adjust all that needs adjusting

CONCLUSION:

Wishing you a great flying season!