RAANZ
# Recreational Pilot e-zine
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## Rotax 912 calendar life

Rotax published TBO figures include both a time in service limit (hours run) and a calendar life (years since initial start of operation).

CAA hold the view that for Part 103 aircraft, the engine manufacturers maintenance requirements stand, even if the airframe manufacturer does not refer to them or offers an alternative maintenance schedule.

The Rotax 912 Maintenance Manual lists the following TBO limits.

| Engine Type description | engine affected engine S/N | TBO Time Between Overhaul |
|---|---|---|
| **912 A** | up to and incl. 4,076.191 | 600 hr. or 10 years, whichever comes first(1 |
| **912 A** | from 4,076.192 up to and incl. 4,410.065 | 1000 hr. or 10 years, whichever comes first (1 |
| **912 A** | from 4,410.066 up to and incl. 4,410.471 | 1200 hr. or 10 years, whichever comes first (1 |
| **912 A** | from 4,410.472 up to and incl. 4,410.856 | 1500 hr. or 12 years, whichever comes first (1 |
| **912 A** | from 4,410.857 | 2000 hr. or 15 years, whichever comes first |
| | | |
| **912 F** | up to and incl. 4,412.585 | 1000 hr. or 10 years, whichever comes first (1 |
| **912 F** | from 4,412.586 up to and incl. 4,412.816 | 1200 hr. or 10 years, whichever comes first (1 |
| **912 F** | from 4,412.817 up to and incl. 4,412.974 | 1500 hr. or 12 years, whichever comes first (1 |
| **912 F** | from 4,412.975 | 2000 hr. or 15 years, whichever comes first |
| | | |
| **912 S** | up to and incl. 4,922.776 | 1200 hr. or 10 years, whichever comes first (1 |
| **912 S** | from 4,922.777 up to and incl. 4,923.889 | 1500 hr. or 12 years, whichever comes first (1 |
| **912 S** | from 4,923.890 | 2000 hr. or 15 years, whichever comes first |
| | | |
| **912 UL** | up to and incl. 4,152.666 | 600 hr. or 10 years, whichever comes first (1 |
| **912 UL** | from 4,152.667 up to and incl. 4,404.717 | 1200 hr. or 15 years, whichever comes first (1 |
| **912 UL** | from 4,404.718 up to and incl. 4,409.715 | 1500 hr. or 15 years, whichever comes first (1 |
| **912 UL** | from 4,409.716 | 2000 hr. or 15 years, whichever comes first |
| | | |
| **912 ULS** | up to and incl. 4,427.532 | 1200 hr. or 10 years, whichever comes first (1 |
| **912 ULS** | from 4,427.533 up to and incl. 6,775.789 | 1500 hr. or 12 years, whichever comes first (1 |

| Engine Type description | engine affected engine S/N | TBO Time Between Overhaul |
|---|---|---|
| **912 ULS** | from 6,775.790 | 2000 hr. or 15 years, whichever comes first |
| | | |
| **912 ULSFR** | up to and incl. 4,429.714 | 1200 hr. or 10 years, whichever comes first (1 |
| **912 ULSFR** | from 4,429.715 up to and incl. 6,775.789 | 1500 hr. or 12 years, whichever comes first (1 |
| **912 ULSFR** | from 6,775.790 | 2000 hr. or 15 years, whichever comes first |

**There are many 912s out there that have many more hours to run but are close to hitting their heads on the calendar limit. CAA's interpretation of Part 103/AC 103-1 means these engines must be overhauled or replaced- an expensive exercise.**

There are components that **wear from use**, which are subject to wear limits and replacement at regular TIS intervals. And there are component that **age with time** which are subject to replacement at regular calendar intervals.

RAANZ's view is that provided those 'age with time' components (mostly rubbers, hoses, etc) are regularly replaced, and the engine is serviced to the Rotax schedule and remains within performance and wear limits, the engines should be allowed to run beyond calendar life up to at least TIS life.

We are lobbying CAA for such a relaxation of their interpretation of the rules.

## A response to claims made about safety & training standards in the Microlight sector:

**Easwaran Krishnaswamy (RAANZ President)**

Members, fellow aviators and aviation enthusiasts, to give you a quick background about what this is all about - A recent article was published in the Northern advocate and the NZ Herald website which talks about safety and training standards in the microlight sector.

You can find this article here
http://www.nzherald.co.nz/northern-advocate/news/article.cfm?c_id=1503450&objectid=12002958

Before getting into the details, RAANZ would like to reiterate that we advocate a safety culture within our community and we encourage any effort that would further this. RAANZ represents a significant percentage of the microlight sector and has many affiliated clubs across New Zealand.

But RAANZ would like to point out that there were inaccuracies in this article, and it would appear that others have, by not challenging these points, tacitly agreed with them.

The article states:

1. “Flight safety in the recreational and microlight flying world is 'not where it should be', resulting in the sector being over represented in plane crash statistics.”

The problem here lies with how the accident statistics are represented and how the numbers are grouped.

The Private Sport sector in CAAs classification includes not only microlights but also gliders, parachutes, paragliders, hang gliders, light sport aircraft and so on, with the majority of the reported accidents coming from other than microlights. Also CAA does not track Part 103 hours specifically, and therefore there is no way to determine **accident rates**. They do track absolute **accident numbers**, and over the time frame they have been recording them Part 103 aircraft and pilot numbers have grown significantly.

From data we hold on our own pilots, we know accident rates against hours flown have fallen considerably, and there is no data to suggest that they are higher than other private GA operations. Last year, Part 149 organizations met with CAA and a graph was produced by CAA that showed the accident/incident reports for microlight aircraft from 2006 to 2016. CAA was specifically asked how this chart would compare with a chart over the same period for General Aviation. They replied that the chart would be similar.

There is a misinterpretation of the presented data on the author's part and the claim is inaccurate as there is not enough data analysis to support it.

2. "many microlight organisations operate without safety management systems, formalised procedures or a training syllabus for their students."

**Safety management systems (SMS)**: The facts are that Part 149 organizations are specifically excluded from the requirement for an SMS, and the view is that an SMS will have a limited effect on microlight accidents/incidents. Most microlight incidents happen in the air and are the result of failures in maintenance, training, flight planning, airmanship or decision making.

In saying this however, RAANZ has published a basic SMS template suitable for smaller club operations, and many of the larger clubs have a formalised SMS and Safety Committee.- Canterbury, Manawatu, Whitianga, etc., to name a few.

**Training:** Both RAANZ and SAC- who make up the largest percentage of Part 103 training- have a training syllabus that is used by their instructors. RAANZ issues the same training guide to its instructors as is used within General Aviation training (the CAA Flight Instructor Guide) .

RAANZ and SAC have internal safety reporting and monitoring systems; both report to the CAA regularly. Our organization is audited every year by CAA and our operations are continually reviewed and aligned with CAA documents and good aviation practices. RAANZ is very proactive in this area and is about to release a revamped online 'Instructional techniques course' which is aligned with the CAA syllabus.

RAANZ has established contact with necessary parties to point out the above stated inaccuracies. While It's great to hear about this initiative, RAANZ would like to reassure interested parties that whilst Microlighting, like any other sport, carries a degree of risk, this is appropriately managed and mitigated through our existing robust training and safety procedures.

## Instructor Controls

**Bill Penman (RAANZ OPS)**

A recent accident report was filed by an instructor following a dual flight. (Names removed)

> *"The aircraft was damaged during a landing.*
> *A student was flying with me .I was PIC.*
> *We had, over the past few days, and on the morning of the incident, been carrying out strip flying on this and other suitable strips. He did all the exercises well and I had confidence in his ability. We were working on throttle use to overcome sink and lift on approach.*
> *The final approach was good. I cautioned him about applying power to arrest the predicted sink.*
> *He pulled the power over the threshold at 20ft ... and then froze. Despite repeated instruction he appeared not to hear.* ***Being a single throttle machine I couldn't take control of it****... We hit hard on the mains, then the student applied full power and pulled up, veered right, slid left, landed, hitting a tree with the left wing, dragging us into a hedge.*
> *There were no injuries*
> *The weather at the time was perfect.*
> *Pilot error.*
> *I notified CAA and police and received clearance to move the aircraft."*

Very lucky both of them.
What can we learn from this?

- Is the aircraft suitable for training in i.e. **are all the controls fully accessible by the instructor?**
- Instructor complacency? I am sure most instructors have come across similar occurrences when they think it is time to sit back and relax a little and not be hovering over the controls. But!!!
- Having briefed the student on a possibility of sink it was probably prudent to hover over the throttle or the students throttle hand.
- Could the instructor have corrected the swing with rudder and aileron?
- Unexpected occurrences quite often take time to effectively evaluate and respond. That goes for instructors as well.
- As instructors we have to consider probabilities.
- We also require an uncanny ability to understand students thinking and responses. Yeah right!

All comes with experience and not all are experienced until experienced personally.

## Departure from controlled flight

**Bill Penman (RAANZ OPS)**

CAA have recently released a report of a double fatality in a Bantam B22, being unable to recover from a steep turn exercise that most likely resulted in a stall and having insufficient height to recover.

The full report is on the CAA web site here.

As a result of the safety investigation a Safety Action has been raised.

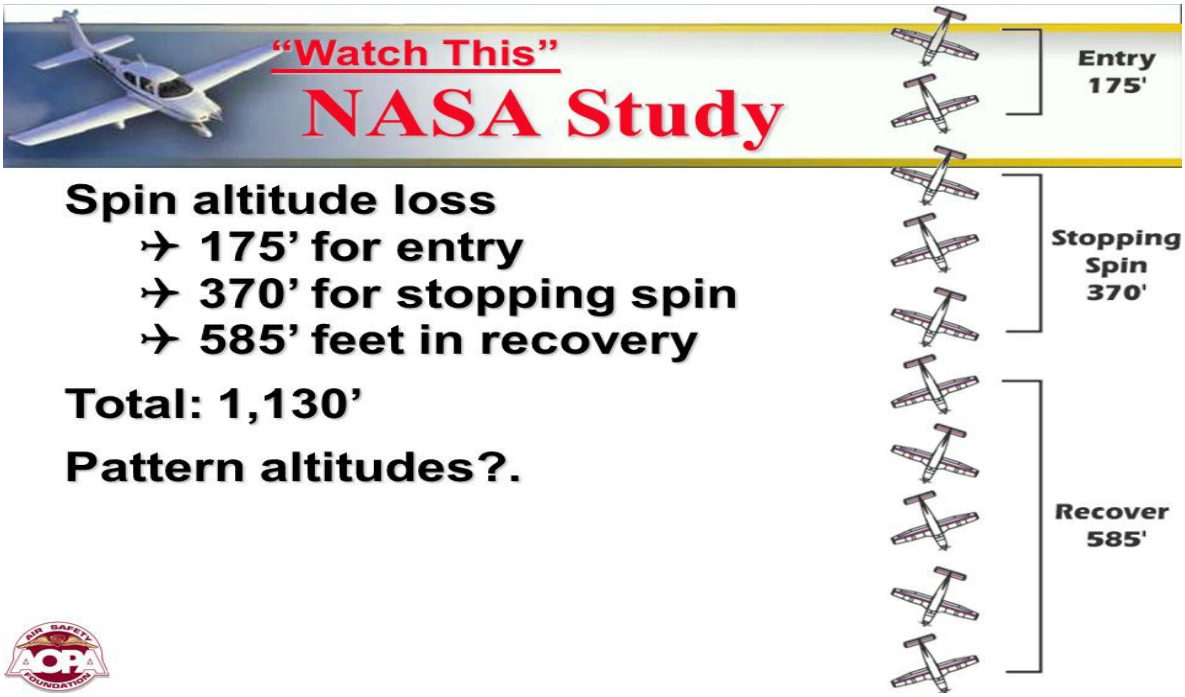
> *4.1 CAA Safety Action 18A866 was raised for the CAA to improve awareness within AROs of the potential for rapid and significant height loss, in the event of unexpected departure from controlled flight, when conducting manoeuvres which have the potential to result in a substantial loss of airspeed.*

General Principles of Flight for carrying out steep turns state:

> 'The increase in stall speed dictates a higher entry airspeed into the steep turn. Failure to maintain sufficient airspeed in the turn could result in a stall. To stall in a steep turn invariably results in a rapid change in direction and loss of height (and may possibly develop into a spin). More height may be needed to recover from such a stall and steep turns must be avoided near the ground'.

The CAA Flight Instructor Guide and RAANZ manuals offer advice on stalling exercises, stating that **they should be conducted at such a height that permits recovery from the stall by not less than 2500 feet above ground level**. If there is insufficient height available to carry out these exercises, consider some other less onerous exercises.

Exercise due diligence and be safe.



## Incident report- Cavalon/E prop

**Incident Details**

| | |
|---|---|
| Microlight type/model | gyro cavalon |
| Place of incident | waiouru |
| Other aircraft involved | nil |
| Describe the incident | A new 6 bladed E propeller had been fitted and flown for less than 6 hours on short trips. During a longer trip to Dannevirke departing from Mercer airstrip slight vibrations occurred after two hours followed by a bang and then more severe vibrations.A safe forced landing in Waiouru defence territory was achieved. The time between vibrations and the disengaged blade was extremely short... a matter of ten seconds. |
| Describe the affect on safety | The disengaged blade could have damaged the rotor blades resulting in a different outcome. |
| Remedial action taken | Removed the E blade prop. Notified the NZ supplier / agent who has notified his supplier / manufacturer in France. Reinstalled the original 3 bladed propeller. |
| Corrective or preventive action recommendations | That all gyro operators who have hot air directed over the hub of E propellers be warned of the possible outcomes. That torque settings be checked after each flight rather than the recommended 50 hours / 3 months |

RAANZ comment

*We believe there may be other unreported instances of blade failures with these props, not necessarily on the same type of aircraft. This may or may not point towards high temperatures being a contributing factor. We urge any such incidents to be reported to help establish the cause and corrective action.*

## Membership changes

| | | | |
|---|---|---|---|
| Brent Martlew | Canterbury Recreational Aircraft Club | Novice | Joined |
| Graeme (Chev) Addison | Eastern Bay of Plenty Microlight Club | Flight Instructor | Upgrade |
| Kaylee McCracken | Canterbury Recreational Aircraft Club | Novice | Joined |
| Graham Gaiger | Associate | non-flying | Joined |
| Marco Siebert | Opotiki Aero Club | Intermediate | Joined |
| Craig Jacobson | Wairarapa Ruahine Aero Club | Advanced National | Joined |
| Trevor Alexander | Fiordland Aero Club | Intermediate | Upgrade |
| Carl Portegys | Geraldine Flying Group | Novice | Joined |
| Terrence Palmer | Manawatu Aviation Club | Advanced National | Joined |
| Jacob Freeman | Canterbury Recreational Aircraft Club | Novice | Joined |
| Jesmond Micallef | Canterbury Recreational Aircraft Club | Novice | Joined |
| Craig Ruane | Canterbury Recreational Aircraft Club | Novice | Joined |
| Ken Tyler | Bay of Islands Aero Club | Advanced National | Joined |
| Ronald Day | Central Hawkes Bay Aero Club | Novice | Joined |
| Cara Bosman | Mercury Bay Aero Club | Novice | Joined |
| Jayden Foster | Kaitaia Aero Club | Novice | Joined |
| Daniel Gendall | Wairarapa Ruahine Aero Club | Flight Instructor | Joined |
| Peter Kirby | Matamata Aero Club | Novice | Joined |
| Leonard Carney | Feilding Flying Club | Novice | Joined |
| Jacob Pedersen | Bay of Islands Aero Club | Advanced National | Joined |
| Anthony Turner | Mercury Bay Aero Club | Advanced National | Upgrade |
| Shanon Eyre | Matamata Aero Club | Advanced National | Upgrade |
| Ian Davies | Wairarapa Ruahine Aero Club | Advanced National | Joined |
| Jack Harvey | Feilding Flying Club | Novice | Joined |
| Andy Palman | Gyrate Flying Club | Novice | Joined |
| Geoffrey Pannett | Hawkes Bay and East Coast Aero Club | Novice | Joined |
| Jeremy Philip | Canterbury Recreational Aircraft Club | Advanced National | Upgrade |
| Garth McVicar | Gyrate Flying Club | Intermediate | Upgrade |
| Erol Williams | Canterbury Recreational Aircraft Club | Novice | Joined |
| Luke Martlew | Canterbury Recreational Aircraft Club | Novice | Joined |
| Hamish Janson | Gyrate Flying Club | Intermediate | Upgrade |
| Daniel Bennett | Wairarapa Ruahine Aero Club | Novice | Joined |
| Gregory Campbell | Parakai Aviation Club | Intermediate | Upgrade |
| Peter McVinnie | Mercury Bay Aero Club | Advanced National | Joined |
| Timothy Barrow | Fiordland Aero Club | Novice | Joined |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