Recreational Pilot e-zine

Issue 104
March 2016

Medical expiry reminders

We are adding a reminder service for pilot medical expiry, as we currently do for membership, BFRs and Annual Inspections. Here's how it will work...

- As each CMV form is received we will capture the medical expiry date off that form into our database.
- The month before your medical is due to expire we will email a reminder.
- **Do not send in your new medical**- keep that with your logbook for inspection on demand.
- We will capture the new expiry date when we receive a CMV form at your next BFR.

You will see a summary of all due dates on most communications from RAANZ (email or letter).

Note that this is a service to members- we will remind you, but we are not policing it. It is your responsibility to remain current (medical, membership, BFR, annual inspection)- 'I didn't receive a reminder' is a poor excuse.

It will take up to 2 years for the system to capture all members medical dates- if you want to hook into the system now, you can email RAANZ with your current medical expiry date.

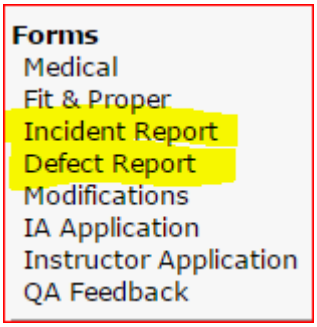
Part 149 re-entry audit

Every 5 years each Part 149 organisation has to go through a re-entry audit. It is a fairly thorough check by CA that the organisation meets all requirements of Part 149, and has the systems, people and credibility to do the job.

RAANZ has just completed that audit with no adverse findings.

So it is on with the job, with a view to keeping our systems as simple and lean as possible, while looking for ways to help our pilots, Instructors and IAs sharpen their skills and keep microlights and recreational flying safe, affordable and accessible.

Incident and defect reporting



One area raised at the audit that we know we can improve on is incident and defect reporting. We get a trickle of such reports from time to time which we publish in the RecPilot and on the RAANZ website. But we know there are many more out there that don't get reported.

Can we encourage you to file those reports- gotchas, lucky I found that, that was a close call, never again. You may save a fellow pilot from expense, embarrassment, injury or death. And it helps RAANZ to get a handle on any issues or trends before they become major problems. And let's face it- **we all like to read and learn from those reports**.

RAANZ 2017 National Fly-in

The 2016 fly-in at Hokitika has just been and gone- see report elsewhere in this edition.

The big question- **where will the 2017 one be held?** Probably time for a North Island venue.

Get your heads together at your club, and see if you could host it, and if so- **put your hands up**- all offers gratefully received!

The Task at Hand; Rotax 5 Year Rubber Replacement

Rotax Owner (identity unknown)- reprinted in the interests of safety

This discussion is going to focus on a topic that will undoubtedly have Rotax engine owners on both sides of the fence, both for and against in a major discussion, but I hope to instil a sense of "Doing things right and for the right reason" and without all the worry some seem to have over this solid and sound maintenance practice. As you can see from the last few words in the last sentence this article will focus on the positives and good maintenance practice and hopefully get away from the all encompassing "Don't fix it if it isn't broke" concept. **I do believe that some items are fine to be on a condition inspection or even wait until it wears out, but those are not flight safety issues or will they present a hazard when they fail.** Planes in general and the hose change cost money , I'll be the first to admit that, but you decided to fly and now you need to ask yourself what your life and your passenger's life is worth and do you want to spend a little money now and keep safe and flying or spend a lot later and be grounded?

The Rotax Line Maintenance manual dated 09-20-12, Section 05-10-00, paragraph 2.1 and subject head "Time limit for rubber parts" is the section we will be addressing in this article. There are two important issues here to cover. First is the issue with hose time limits and how long will a rubber hose last? The second and possibly more important is hose selection and the right way to install a hose which is covered in part 2 of this article.

Many of the machines we use now days in a high risk environment have some type of maintenance program the manufacturer wants followed and some are mandatory. Even our automobiles have a recommended hose, serpentine belts and V-belt replacement program. Some owners are good about following these practices and of course we see some autos stranded on the side of the road or even a damaged plane in an off field landing and these folks may not have been as good about their maintenance practices. Even with a good maintenance program mechanical parts and hose can and do fail. **The whole idea is to put the odds in our favour and not test the limits. If** we are in our auto and have a hose failure we can pull over and call for assistance. If we are flying in our aircraft then a hose failure is probably going to bring you and possibly a loved one down in the worst possible area. Do aircraft hoses fail before their time? Yes they do and have caused many an aircraft emergency. With that in mind many aircraft engine and aircraft manufactures in general have recommended time tables to which they recommend a hose maintenance program which is usually backed up by 20-60 years worth of data and failures not to mention the recommendation right from the hose manufacturer themselves. The bottom line is Rotax and others are trying to err on the side of safety and not test the limits of each hose within the hostile environment in the engine compartment as you are flying over the Grand Canyon. If you are one that says don't fix it until it breaks then you may be willing to switch sides as you glide down into the Grand Canyon that has no landing areas and a has the fast running Colorado river.

Many aircraft manufacturers now recommend that you follow the Rotax 5 year rubber replacement program. So how long is oil, fuel and coolant hose good for? The answer is, who

knows for sure. Could it last only one year before a failure, yes. Could it last ten years before a failure, yes. No one can ever tell you exactly when a hose may fail so we use decades of observance and factor in some safety and make our best guess for you to get to that point and not have an issue. Over the last several years we are seeing a huge increase in owner compliance with the hose replacement program and that's good news, but too many have had hose particles reaching the carbs and causing a power reduction.

The immediate response has been that it must be bad hose, but in 98% of the cases it has been mechanical damage from poor installation practices and possibly poor hose choices. There have been a few pieces of bad hose and Rotax issued a Service Bulletin for the fuel pump hose because of that very issue, but that is usually very rare compared to the amount of hose actually sold and used. Let's look at the hose time table for replacement. Many want it to be a condition inspection replacement item. Okay so what are your replacement limits? Is it when the hose gets hard? That's too late in the game. What about the fuel and oil hose in the fire sleeve? Do you dismantle all that hose and pull it all out of the fire sleeve to inspect it? I know of no one that does that. While you are looking at the outside what about the inside that begins to flake or degrade from time? How do you inspect that? How do you inspect the hose for cracking and separation under the hose clamp at the edge of the fitting on the inside and outside of the hose? (This is the most common problem area.) How many of you have been trained by a hose manufacturer to know even what to look for or were you just taking someone else's word for your education?

So looking at it from a safety stand point, none of us are hose experts or have all the data the engine and hose manufacturer have so it just makes good common sense to err on the safe and practical side for you and your passenger's safety. I would like to mention one other item here and look at it from a legal burden which none of us hopes to have to encounter. If you have someone in the plane with you and go down because of a hose failure and it is past the aircraft and engine manufacturers recommend rubber replacement time and the other person or other person's family member takes you to court I would hope that you can back up all the good solid reasons that you didn't do the recommended maintenance because it will be brought up and **your hose expertise** will come to the forefront. Family members and their lawyers are not very forgiving. That alone is enough to scare me because I have been to those types of court cases for over 30 years. If you error on the right and safe side it is much easier to defend from a legal standpoint.

For those who have decided that they will do a Rotax 5 year rubber replacement we need to look at what it covers and how we can utilize good sterile maintenance practices to keep debris from our hose lines. I will admit that there is more than one way to accomplish this procedure and what will be discussed in this article is, but one way.

The Rotax 5 year rubber replacement covers all fuel, oil and coolant lines. It covers any V-belt, carburettor diaphragm and carburettor rubber intake sockets and any other air intake rubber hose or tubing. With the new maintenance manual just out the fuel pump has been added as a replacement item too. So now you need to decide what brand hose you are going to use. Should it be fuel injection hose or standard carburettor hose? Since we are dealing with a worldwide distribution for engines the hose selection can be vast, but by all means should be thought out. We need to decide what tools we are going to use to cut the hose and how we are going to secure it in place. These again will vary depending on your geographical location.

Since I live in the US and have access to many a mechanic and can relate to my own observations I'll use this as a base for my comments and you can adapt and or re-think how it may pertain to you where you live.

I have access to the Rotax hose change practices, information and results from several mechanics including myself which easily covers a couple hundred Rotax engine hose change procedures.

Rubber fuel hose was really not intended to push over barbed fittings as documented on several fuel hose manufacture websites. They prefer the flared or bulb end to slide the hose over. That said most of us have exactly that, barbed hose ends on many aircraft installations. What we have found is that fuel injection hose is less flexible than the standard carburettor hose. When you try to push fuel injection hose over a barbed fitting it has less give because of its pressure rating and tends to scrape the hose liner and small particles then float down stream. This is exacerbated by using a cutting tool with a serrated edge. Something like serrated edge scissors. Then add using the wrong style clamp and over tightening the clamp crushing the hose all adds to debris floating down stream towards your carburettors and a power loss when you absolutely don't want one. **So picking our hose type, tools and clamps are important ahead of time.** As the old saying goes, "Failure to plan is planning to fail".

Generally speaking, fuel injection hose has a working pressure normally around 100 psi and a burst pressure of around 900 psi. Standard carburettor fuel hose has a working pressure of 50 psi and a burst of 250 psi. The good thing with the standard carburettor hose is it has a little give in it since it isn't as stiff and rated for the higher fuel injection pressure. This hose will slide over the flared, bulb or barbed fittings much easier and there is far less chance of scraping the inner liner and causing unwanted debris. A smooth inner liner is more preferable than a raised criss-cross pattern on the inside of some fuel injected hose which is caused by the thread re-enforcement of the hose. This tends to scrape more with a barbed fitting. I know everyone remembers that our normal 912 fuel system operating pressure is up to 2.2 to 5.8 psi for the 912UL or ULS engine. So let's just say the upward limit is 6 psi to round it off. So using the standard carburettor hose works just fine with plenty a pressure safety margin.

Now who's brand to use? Well that is up to you and where you live in the world. For me and many of my mechanic friends we have been using Gates Barricade Greenshield technology standard carburettor hose. It has 4 liners and is rated for any fuel and even 100% alcohol.

That should pretty much cover anything we will put in our 912 engine. We have not had any issues with scraping inside lining or hose degradation. The other big issue here is to use the proper cutting tool. I used to manufacture dive compressors and used 200'K of hose a year and needed perfectly smooth cuts. I use a Sears Craftsman Utility cutter Craftsman 3-7/8 in. Handi-Cut, item #00937301000, Mfr. model #37301.

It has a 3 7/8” long straight and scalpel sharp edge. It leaves a perfectly smooth cut and will handle any hose on a 912 engine. Serrated edge cutters will leave very tiny particles on a cut edge which gets shoved into the hose line when pushed over a fitting.

Hose clamps. I’m sure everything gets used here. You really should not use the standard hose clamp with the serrated openings like you buy in a hardware store. Yes they do get used, yes they have been around a long time, but they don’t give a good solid 360 degree seal, they can be over tightened and easily stripped and they cut into the outside of the hose. If you absolutely want to use a screw type clamp then use a fuel injection clamp. It doesn’t cut into the hose, you can’t strip it and it does a better job with a 360 degree seal. If you have to use a screw clamp then the one in the picture below with the raised ribs is a better choice and doesn’t over cam and strip and won’t cut into the hose. These clamps are better for coolant hose and not fuel.

The next picture shows a fuel injection clamp (on the left) verses the standard hardware store clamp. Fuel injection clamps are good for oil hose and if you don’t have access to good Oetiker clamps then it’s a good second choice for fuel.

The better way to go and is preferable as an industry standard is something like an Oetiker band clamp. (Pictured below) I personally use a stainless steel one ear stepless Oetiker clamp on all fuel hose applications. They come in all sizes from the very tiny to the very large. It slides over the hose and you use a set of pinch pliers to squeeze it shut. I know then it won’t rust, it can’t come loose and provides an excellent 360 degree seal. One note for this clamp is to use the correct size and don’t use too small a clamp and crush it to death especially over a barbed fitting.

Now we should also mention that all your fuel and oil lines should be in fire sleeve. The best and industry standard is to use Band-It style clamps to secure the fire sleeve ends. These look like a little noose that gets pulled and cinched down to secure the fire sleeve. These can apply tremendous torque so only barely snug these down on any hose. If you over tighten these they will close off the hose underneath and restrict its flow. These clamps are already on the fire sleeve on the fuel pump from Rotax. The best way to remove these clamps and Oetiker clamps is with a Dremel tool and a re-enforced cut off wheel. You can use the Oetiker pinch pliers to remove these too.

There is one last item to cover. We are supposed to seal the ends of the fire sleeve with something to keep fuel, oil or any liquid from wicking up into the fibres of the fire sleeve at its ends. You can use a couple of different methods. Some use the red silicone RTV and thin it slightly with a little toluene and brush it into the end and fibres of the fire sleeve. Some use a product called “End Dip” which comes in a quart can for $185-$225. You dip the fire sleeve ends and let it dry. I hate to sit and wait so there is one more good option. You can use fire sleeve self vulcanizing tape that is fire rated like the fire sleeve.

You as an owner can do one last safety check. After the hose has been installed and the engine is run and the carburettors synced you can run the engine for another 20-30 minutes on the ground at 3500-4000 rpm. Then head back to the hangar and pull the carburettor bowls off and look for any debris that may have escaped your careful planning and installation. It’s just a good safety check before your first flight and should help you cover all your bases in looking for any leaks and debris before your first flight.

So here we are at the end. The whole idea of this two part article is to make you think about keeping yourself and your passenger safe with a good solid maintenance practice and not being the test subject for hose time limits. Don’t worry there will still be the ones who, ”Won’t fix it until it breaks” that we can read about in the news with the off field landing or expensive engine tear down from a damaged engine. Hopefully you will look at a Rotax 5 year rubber change with a positive attitude and plan to think about what hose, tools and clamps you want to use and not use.

Everyone Fly Safe and Often!

RAANZ 2016 national fly-in, Hokitika

John Skene, CAA (Airworthiness Inspector- Microlights)

The recent RAANZ microlight aircraft fly-in was held at Hokitika airfield over three days in February.

The fly-in was successfully co-organised by the West Coast Microlight Club (WCMC) and the Hokitika Aero Club. (HAC)

Good weather was a welcome feature, as was the warm welcome from the organizing committee from the West Coast clubs involved.

A quick count arrived at 37 (including a good number of 'trikes,' six from memory) with 43 registered pilots for the competitions.

Unfortunately the wind came up during the Sunday afternoon (a south-wester) so the main runway (03/21) was used.

The competitors were given a self-nominated take-off roll task plus two spot landing opportunities.

I was intrigued to see ZK-LBW, a fine example of the CriCri aircraft, demonstrate its spritely performance on the Friday evening using all of the 30 hp available…

Also present was the Kingfisher amphibian aircraft, ZK-DJH. Sadly I didn't get to see this interesting aircraft fly.

I attended the pilot briefing on the Sunday and found it to be well presented, informative and clear in what was expected of the pilots participating in the competition events.

Overall, I was impressed by the presentation and condition of the microlight aircraft I saw there and also the willingness of the pilots/owners to talk about their aircraft.

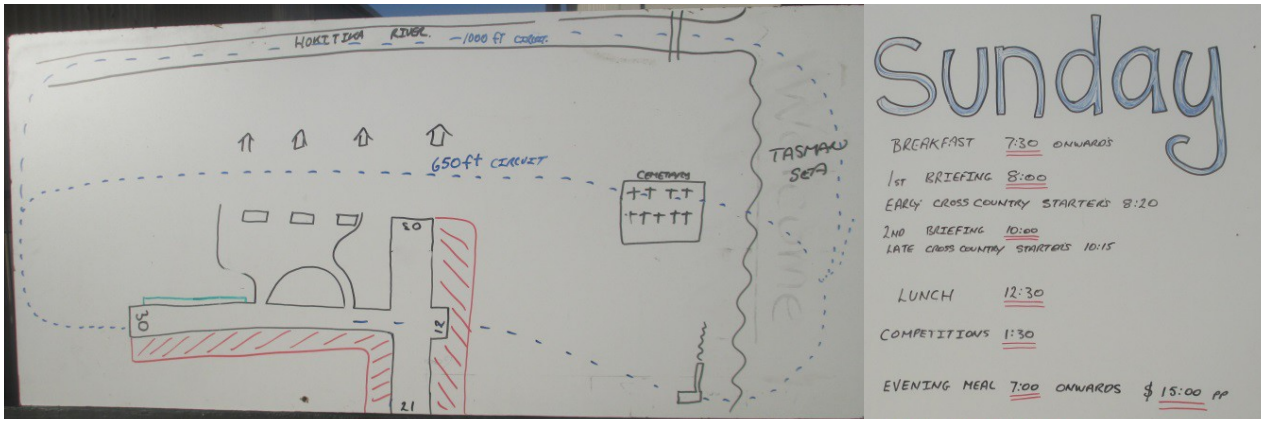
The Sunday briefing

I attended the Sunday morning briefing and found it to be clear and easily understood.

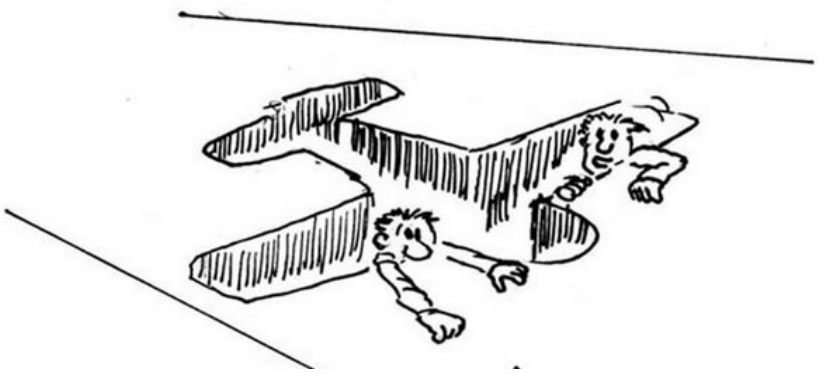
The organizers' had arranged for two different cross-country courses to cater for the differing performance characteristics of the range of microlights participating.

Both courses were scheduled to be completed prior to the lunch break on Sunday.

The flying (take-off and landing) skills competitions were scheduled for Sunday afternoon and sadly, I had to miss this event as I left for Christchurch/Wellington on the 1.30 pm Beechcraft 1900 flight.



Briefing graphics


Yep, you landed on the spot…..

Selection of Aircraft in attendance

Similar but different

CH 601UL ZK-ZOT (C/N 3271) first flew on 6/6/97.


The Bennett Condor 001, ZK-CON

ZK-EEZ (C/N AACA/130/1)

This aircraft became a Class 1 microlight a few years back.

ZK-AMC

Tundra tires, a commentary

(With thanks to 'Google')

"In the United States and particularly in Alaska, tundra tires of various designs were often installed under local field approvals by Federal Aviation Administration inspectors. These approvals were usually granted on the basis of visual inspections and did not include flight testing.

After a number of accidents with aircraft equipped with tundra tires, culminating with a large number in the fall of 1994, the National Transportation Safety Board identified that the tundra tires were connected with the accidents. Starting in April 1995 the FAA carried out flight test experiments to determine whether the tundra tires were a contributing factor.

The tests used a Piper PA-18-150 Super Cub equipped in sequence with five different sets of tires, including standard factory tires and tundra tires up to 35 in (89 cm) diameter. The PA-18 was operated at different weights and center-of-gravity positions.

The testing on the ground revealed that the larger the tire, the more restricted the forward visibility on the ground, that there was a nose-down pitching moment when the tires contacted the ground on landing, particularly on a wheel landing, and that tundra tire-equipped aircraft have substantially poorer ground handling characteristics on pavement. In the air, the use of tundra tires reduced top speed, rate of climb, angle of climb, range, useful load and stall warning buffet margins.

The tests did not indicate that tundra tires raise stall speed, but did find that, due to increased drag in turns, the aircraft nose tends to drop excessively with an increase in bank angle. If the pilot counteracts this tendency with rudder and stalls the aircraft, the airplane will rapidly enter a spin.

Alaska bush pilots disputed the experimental findings, but, as a result of these experiments the FAA required that all installed tires be subject to a Technical Standard Order or Parts Manufacturer Approval, have been flight-tested and subject to a weight and balance report, determining an acceptable flight envelope. The FAA also limited tundra tires to 35 in (89 cm) in diameter, eleven inches (28 cm) short of the largest original Goodyear "airwheel" tire size available in 1930."

Trikes-a-mighty……

ZK-DUG, an XT912 from the Rangiora club.

The ‘trikes’ added variety and colour to the weekend

The end

Almost forgot …. **ZK-RUA**

RAANZ Presidents Report

Rodger Ward/RAANZ Pres

Well Hokitika has been and gone and barring a major move in the alpine fault I am sure the scenery and weather that was laid on for us will still be there for your next visit. Hmm.. when ?

Thanks to all those people that came out of the woodwork to cook, marshal, clean up, judge and generally keep things moving smoothly. The Take-off/ anding competition was one of the best orchestrated I have seen. I am always amazed how these things get done with apparently no fuss. Having an Airport Manager as an active microlighter certainly helps the cause.

Thanks also to all those that made the effort to get down the coast. It certainly would not be much of a fly-in without you. When you sit down and add up our group's years of exposure to aviation and hours sitting in the pilot's seat you will find that we are a very experienced bunch. Of note also was the addition of several younger members. These people do have an extreme advantage with access to this wealth of experience. Make sure you share it around and mentor whenever you can.

There certainly is some significant terrain in the area and quite often mother nature does not play ball. Looking at metvuw a week and a half out I thought 'whoops'. But it gradually morphed into a few very nice days.

I managed to get two aircraft over the hill. The Titan was positioned the Sunday previous when a weather window said today is the day. Thanks to Glenn for following me across and giving me a ride back. The Sting is a very nice aircraft ! Thanks to Murray for giving the Titan a bedroom for the week. The Cri Cri was trailered across on Friday and certainly enjoyed it's time on the coast.

A lot of what we do is networking. We have a multitude of special people in our group with expertise in many areas all sharing a common interest in recreational aircraft. We did break an exhaust spring on the Cri Cri. "Don't worry Evan has an engineering business in Greymouth and is on his way here. I will get him to bring a few" Half an hour later aircraft fixed.
Want to go running on the coast before your day at the airfield then see Hamish. Hamish has a Zenair 750 on the airfield and also held the record for the Coast to Coast mountain run for quite a while. It is amazing how generous people are to further or maintain the sport. Roll on Fly-in 2017. See the venue add elsewhere in this publication.

GPS- My recent excursions have left me thinking about GPS and its uses. I have bought a GPS receiver to help my iPad along. **GPS** comes in two models**. Mark 1** and **Mark 2.**

I have been using Mark 1 for quite some time or think I have. Coupled with my Titan's Lexan .125 moving map display it has served me well. **GPS Mark 1** translated means **G**ood **P**iloting **S**kills or Airmanship. You know that overarching set of basic skills we need to safely operate an aircraft. The Lexan .125 is the clear stuff the separates me from the airflow. If you keep it clean and look out through it often you can pick up a wealth of information.

GPS Mark 2 is the recent war left over that can be useful at times to confirm your position.
I think it is wise to master Mark 1 before trying to use or rely on Mark2

Safe Flying, **Rodger**

Membership changes

Colin MacMillan	Manawatu Microlight Club	Advanced National	Upgrade
Deane Philip	Canterbury Recreational Aircraft Club	Advanced National	Upgrade
Eddie Eelman	Kaitaia Aero Club	Advanced National	Upgrade
Rod Willis	Gyrate Auckland	Novice	Joined
Devon Samuel	Mercury Bay Aero Club	Advanced National	Upgrade
Anton Meier	Matamata Aero Club	Flight Instructor	Upgrade
Joshua Smith	Kaitaia Aero Club	Novice	Joined
Krishnen Pillay	Matamata Aero Club	Novice	Joined
Alexander Baker	Canterbury Recreational Aircraft Club	Novice	Joined
Eldred Hubbard	Canterbury Recreational Aircraft Club	Novice	Joined
Darrell O'Sullivan	Feilding Flying Club	Novice	Joined
Peter Fantham	Canterbury Recreational Aircraft Club	Advanced National	Joined
Bernadine Tanoa	Mercury Bay Aero Club	Novice	Joined
George Gould	Canterbury Recreational Aircraft Club	Advanced National	Joined
Steven Jubb	Feilding Flying Club	Novice	Joined
Cedric Murphy	Feilding Flying Club	Novice	Joined
Captain Derek Ellis	Bay of Islands Aero Club	Advanced National	Joined
Dale Hokin	Feilding Flying Club	Novice	Joined
Michael McMillan	West Coast Microlight Club	Novice	Joined
Willem Barendsen	Hawkes Bay and East Coast Aero Club	Novice	Joined
Michael I'Anson	Parakai Aviation Club	Novice	Joined
Tara Piech	Bay of Islands Aero Club	Novice	Joined

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