VOLUME 18, ISSUE 8

AUGUST 2005

EAA 908 HYLITES

Monthly Newsletter for Chapter 908, EAA
Saint Lucie County, Florida

Apology to James Thurber - By Richard

A lot of us pilots have always had dreams aircraft that are bigger, nicer, faster, higher flying, etc. How many of us remember reading the short story of Walter Mitty, and his day-dreams -- puckata, puckata, puckata. But we are all faced with the reality of economics -- the allocation of limited resources to unlimited wants and desires. So that is were experimental aircraft comes in, we can build something ourselves and save a lot of money. And there are a lot of new technologies out there that can be used to make the aircraft bigger, nicer, faster, high flying, safer, etc. Every issue of the Sport Aviation has something in it for us to drool over. We keep our dreams alive as long as we are physically able.

We must do our homework, or we can't get a passing grade. Same with an experimental aircraft. And there is so much to learn about the choice of a project, to the building techniques, aerodynamics, avionics, and of course regulations. I have yet to build a project, but I understand that a detailed construction log is an absolute necessity. Without it and all you have is a pile of junk in the garage or hangar.

A few weeks ago while eating lunch at my desk, I decided to see what was the latest stuff for sale on eBay's aviation site. Puckata, puckata. Sure enough, there were several experimental kits and fully completed aircraft. Along with several dozen Cessna's, Piper's, and other production aircraft. If you've paid attention so far, I have always used 'aircraft' when referring to flying machines, not airplanes. That's because I still have fond memories of the first aircraft that I ever flew, a TH-55A helicopter that is also known as the Hughes 300. And yes, there are a couple of these on the eBay aviation site. Puckata, puckata. And there are powered parachutes, ultralights, seaplanes, gyrocopters and sport planes. Just check the balance in your bank account or credit card statement and you can soon own a new project or aircraft. Puckata, puckata.

At Left -- Mike Ketchpaw is about to take off a main wheel as part of the Annual Inspeciton of the Flying Club's Cherokee.

Mark Your Calendar:

- **August 17th Chapter meeting**
- **August 20th - Pancake Breakfast**
- **October 15th - Young Eagles**
- **Every Sat. morning — coffee and donuts at club house**

Officers:

President	Kevin Griffin 579-6529
V. Pres.	Eddy Kemper 336-0950
Secretary	Jerry Groendyke 489-9150
Treasurer	Ron Knaggs 429-1241
Past President	Jim Wetzel 878-1973
Directors	Dr. Jerry Gordon 343-7226 Paul Fischer 464-0538 Romeo Vadnais 461-6089

Newsletter Ed. Richard Chapman
email to: cfo@cypress-und.com

Computer Corner - Richard Chapman

A few issues ago I mentioned the 'on-line' type of email accounts. These are usually available for free and are offered by many web site hosts. Some of the bigger players are MSN, Yahoo, Juno and Google. But there are thousands more, I did a Google search on 'free email account' and it came back with 75,000 hits. Some of these were obviously in foreign countries, which could be of value in some situations.

So you are probably asking, "Why would I need one of these accounts?" Well, here are some of the reasons. First, the account can be accessed from anywhere in that you can get access to the internet. Any friend or relative's house, your neighbor's house, most public libraries, work, an internet café in Paris, London or Timbuctu. Another feature of these accounts is that you are not tied into the hardware line that you subscribe to for your internet access at your home. Bell South, Adelphia cable, and other internet service providers (ISPs) all are very happy giving you five or ten email accounts with your high speed line or dial up service. Why? Because if you change to another ISP, they cancel the email accounts that you had with them. It's somewhat analogous to having the same phone number if you change land line or cell phone providers. But with a internet based email account, it doesn't matter who your ISP is, or even if you have an ISP at home. Just borrow the neighbor's computer, the computer at work, the library, or an internet café. Caution about the work computer, your employer may prohibit or block such internet access, check first. Another use that I make of online email is to have password confirmation or assignment email sent to it and then store the message in a folder for any future reference. If I forget the password, I search the folder for the appropriate message and save a lot of time restoring my applicable access.

Most online email providers offer similar features, but check first. I have used Microsoft's Hotmail for many years and the features have actually improved at still no cost. They now offer a whopping 250 megabytes of mail storage, a junk mail filter, and virus scanning for any attachments. Hotmail is run by one of the largest companies in the world, who's primary business is computer software, and has many servers and backup servers in a variety of locations around the country. This is important to us in a hurricane area that is subject to wide spread power outages.

What are the downsides of online email? Here are several that you may consider in a decision to use it. The first is that you must access the account every so often, for Hotmail it is 30 days. After that, your account is suspended and you may not get new emails or your stored messages are deleted. After about 60 days of non-use, the account is deleted entirely. Another disadvantage is that you will have banner ads on the top, bottom or sides of you screens as you view the inbox or messages. But you're getting this service for free, and this is like reading a newspaper that has display ads around the news text. On Hotmail, they have never been a big distraction for me. And if you want a printed copy of the message, Hotmail has a print message window that displays the text without the ads. If you received newsletters, advertising messages from companies and organizations that you have provided your email account to, these are often flagged as junk mail messages. So I have to occasionally check the junk mail folder and click a couple of times to establish the sender as ok, not junk mail. Not too big a disadvantage, as you have to do something like this for any email account that you have.

I encourage everyone to consider an online email account. The features do change from time to time, and most offer enhanced features for an additional fee. The Flying Club chose Yahoo over Hotmail due to the nice free calendar module that we use for scheduling the plane.

August Meeting

For the August meeting, the Chapter will have a pot luck dinner. Social time 6 to 7, and dinner at 7pm. Eddy Kemper is coordinating the event.

July Meeting

Mike Ketchpaw showed his video of the P51 Mustang flight that was shot during his fantasy flight. We all had a lot of oohs and ahhs as he did rolls, loops and other fun maneuvers. He did say that the cost was several thousand dollars, but did include the video and an hour and a half of flight time. The Mustang has a Rolls-Royce Merlin engine that has a TBO of 450 hours and then costs $100,000 for an overhaul. The airframes and engines are all 50 to 60 years old and spare parts are hard to find and expensive.

Engine TBO - Time Between Overhaul

Engine TBO (time between overhauls) seems to be one of the most misunderstood concepts in aviation maintenance. There are lots of TBO-related old wives tales that are widely believed by owners and mechanic alike, and they can cost owners a great deal of money. Mike Busch endeavors to clear up these misconceptions, and explain what TBO really means.

By Mike Busch *Columnist* -- The Savvy Aviator

Ask any aircraft owner what the TBO is for the engine(s) on his aircraft and you'll almost always get the correct answer without hesitation: "My engine has a 1,700-hour TBO." But ask that owner to explain the significance of that TBO figure and you'll get all sorts of answers, most of them flat wrong. Here are a few of the most common misapprehensions about TBO:

"It's illegal to fly an airplane if the engine is past the TBO established by the manufacturer."

Nonsense. The TBO figures published by Lycoming and TCM are not airworthiness limitations. An engine may be long past TBO and still be legally airworthy. (An engine may also become unairworthy long before reaching TBO.)

"While it's true that manufacturer's TBO isn't compulsory for non-commercial (Part 91) operators, commercial (Part 121/135) operators are required to overhaul an engine when it reaches TBO."

Not so. Both Lycoming and TCM publish engine TBOs in the form of non-mandatory service bulletins. Some Part 121/135 operators have Operations Specifications that require them to comply with all manufacturers' service bulletins (even non-mandatory ones), while others have Op Specs that require compliance only with mandatory service bulletins. Those in the latter group are no more obligated to comply with published TBO than are Part 91 operators. Those in the former group might theoretically be required to overhaul at published TBO, but most such operators request TBO extensions from their FSDO and these are routinely granted, often for as much as 50% over the engine manufacturer's published TBO. So, in actual practice, published TBO is hardly ever compulsory for any operators -- commercial or non-commercial.

"Continuing to fly an engine beyond TBO could void your aircraft insurance."

Poppycock. I've yet to see any aircraft insurance policy that requires compliance with non-mandatory service bulletins as a condition of coverage. Most policies only require that the aircraft be airworthy and in compliance with FAA inspection requirements.

"Continuing to fly an engine beyond TBO is dangerous because doing so increases the chance of an in-flight engine failure."

To the contrary, an engine is much more likely to fail during the first few hundred hours after major overhaul than during the first few hundred hours after passing published TBO. If you exclude fuel starvation or exhaustion (i.e., pilot error), most engine stoppages involve mechanical failure of some "top end" engine component like a cylinder, exhaust valve, piston, magneto, turbocharger, exhaust stack, etc. Such bolt-on components are routinely replaced during normal maintenance without any need to overhaul the engine. The purpose of a major engine overhaul is to inspect, recondition and or replace the engine's "bottom end" components -- crankshaft, camshaft, crankcase, gears, bearings, etc. -- that cannot be accessed without splitting the case. But these "bottom end" components are seldom implicated in catastrophic engine failures. Furthermore, in those rare cases when these components do fail (e.g., crankshaft fracture), the failure is almost never correlated with time since overhaul. (If a crankshaft is going to fail, it's most likely to fail during the first few hundred hours after manufacture, or after a prop strike.)

"Continuing to fly an engine beyond TBO is false economy, because doing so just makes the inevitable major overhaul more expensive."

This old wives tale probably originated back in the days when new cylinders were very expensive and most engines were field overhauled using reconditioned (chromed or oversized) jugs. In those days, if you pushed an engine to the point that its cylinders could not be reconditioned, you'd have to spend more at overhaul to buy new ones. Nowadays, however, the cost of new cylinders has come down to the point where most major overhauls include all new jugs as standard procedure. Consequently, there's no longer any real advantage to overhauling sooner rather than later. The only things that will impact the overhaul cost are an unserviceable crankshaft or a cracked crankcase, and neither of those items are any more probable for an engine operated beyond TBO.

By the way, it's not just owners who hold these misconceptions. Plenty of A&P mechanics believe these things, too.

TBO From The Horse's Mouth

The definitive word on the subject of TBO for engines manufactured by Teledyne Continental Motors is TCM Service Bulletin M91-8 -- "Recommended Overhaul Periods for All Teledyne Continental Motors Aircraft Engines" -- dated July 10, 1991. This is the document in which TCM publishes a table of recommended TBOs for all TCM engine models.

TCM service bulletins come in three different grades: recommended, mandatory, and critical. Critical service bulletins are typically reserved for items that are considered so urgent that TCM asks the FAA to issue an Airworthiness Directive to mandate compliance. Mandatory service bulletins are less urgent, normally not accompanied by an AD, and normally "mandatory" only for commercial operators. Recommended service bulletins are used for conveying helpful hints to owners and mechanics, but they are merely suggestions and compliance is strictly up to the

(Continued on page 4)

Engine TBO - continued

individual operator.

M91-8 is one of these lowest-priority service bulletins. It offers recommendations, but they are not intended by TCM to be obligatory for any operator. To underscore this point, let's take a look at exactly what TCM says in M91-8 (emphasis mine):

Thousands of hours of operating experience indicate that Teledyne Continental Motors (TCM) aircraft engines, when operated within prescribed limitations, instructions and recommendations, can be operated between overhauls for the number of hours listed in the following table. ***The overhaul periods listed are recommendations only****. They are predicated on the use of genuine TCM parts, compliance with all applicable Service Bulletins and ADs, as well as all required preventive maintenance, periodic inspections, manufacturer's specifications, and the determination by a qualified mechanic that the engine is operating normally and is airworthy. The accomplishment of cylinder leakage checks and spectrographic oil analysis may be helpful in making this determination.* ***Any operation beyond these periods is at the operator's discretion and should be based on the inspecting mechanic's evaluation of engine condition and operating environment.*** *Calendar time also affects this condition and should be taken into account.*

Particular attention should be paid to throttle response, power, smoothness of operation, oil consumption, to the proper use and maintenance of oil and air filters, and adherence to the recommended oil change periods. Emphasis should also be placed on recommended fuel management. ***These recommended overhaul periods in no way alter TCM's warranty policies.***

The wording of TCM's service bulletin M91-8 makes it explicitly clear that:

> Published TBO is strictly advisory, not compulsory.
>
> Operation beyond recommended TBO is permitted at the operator's discretion.
>
> Operation beyond recommended TBO does not void the manufacturer's warranty.
>
> Engine overhaul should be performed "on condition" based on the inspecting mechanic's evaluation of engine condition, based on compression checks, spectrographic oil analysis, oil consumption, and subjective assessment of engine performance (e.g., throttle response, power, smoothness of operation).

Bottom line is that if an engine is still going strong when it reaches TBO, there's absolutely no reason to consider removing it from service for major overhaul, and every reason to continue flying until it starts showing signs that overhaul is warranted.

So What Good Is TBO?

Does this mean that the manufacturer's TBO is a worthless figure that should be ignored? No, not at all. In my view, the best way to think about published TBO is the way we think about human life expectancy statistics.

According to the National Vital Statistics Report published by the Centers for Disease Control, the current life expectancy at birth for a white male in the United States is 75 years. This statistic might be quite useful in figuring out what premium to charge for a life insurance policy, or how to plan for retirement.

Does this mean that white U.S. males should be euthanized (removed from service) when they reach age 75? I certainly hope not! In fact, the same CDC figures show that the current life expectancy for a 75-year-old white male in the U.S. is 11 years. In other words, if you're still kicking at age 75, you can expect on average to live until age 86. Furthermore, if you are still alive at age 86, your life expectancy is 6 years so on average you can be expected to live until age 92.

Similarly, according to TCM Service Bulletin M91-8, the "life expectancy at birth" (recommended TBO) of TSIO-520-BB engines (like the ones in my 1979 Cessna T310R) is 1,400 hours. This statistic might be quite useful in figuring out a suitable dollar amount for amortizing overhaul expense. Since it costs about $30,000 to overhaul one of these engines, a reasonable "reserve for overhaul" would be $21.43 per hour (i.e., $30,000 divided by 1,400 hours). This figure would also be appropriate for adjusting the "blue book" value of my airplane to account for higher- or lower-than-average engine time.

Does this mean that I should have euthanized my engines when they reached 1,400 hours SMOH (since major overhaul), despite the fact that they were running great, had excellent compressions, low oil consumption, no metal in the oil filters, and excellent oil analysis reports? No, I don't think so. Although TCM doesn't publish figures for "life expectancy at 1,400 hours" for these engines, it only stands to reason that TSIO-520-BB engines that are in good shape at 1,400 hours surely have a good deal of useful life left in them. (As previously noted, many commercial operators routinely run their engines to 150% of manufacturer's TBO with the FAA's official blessing.)

Some Real-World Experience

When I purchased my T310R in 1987, it had 1,300 hours total time on the airframe and engines. Since TCM's published TBO for its TSIO-520-BB engines is 1400 hours, those engines were pretty much "run out" when I acquired the airplane (and the price I paid was adjusted downward accordingly).

At 1,400 hours those engines were still running superbly, and all signs pointed to them being in great shape. I wound up flying those engines trouble-free to 1,900 hours (500 hours past published TBO), at which time I started getting nervous and pulled the engines for major overhaul.

As it turned out, my nervousness about flying those engines 500 hours past published TBO were completely unfounded. The

(Continued on page 6)

Safety by Richard Chapman

In an effort to cut costs, the FAA has decommissioned several hundred NDB approaches. In almost all cases, they overlapped newer GPS approaches. In our local area, Vero Beach lost 2 and Palm Beach International lost 1. Probably not a big impact on our flying. You might ask, "How would this save money, the beacons are not being turned off?" The actual savings is in the flight checking of the approaches by FAA flown airplanes. At a recent airshow, a DC3 was on display that had been used for several decades to flight check airways and approaches.

Last October, a CFI and a dual student in a Kitfox took off from the Indian River Aerodrome, Vero Beach. At about 250, the engine lost power. A forced landing was accomplished straight ahead, during which the airplane collided with a tree. Both pilots sustained non-fatal injuries, and the airplane was substantially damaged. An FAA inspector examined the engine, found no broken or missing parts, fuel was in the carburetor and the fuel screens were free from debris. He concluded that the engine should have been capable of producing power. Conclusion was loss of power for undetermined reasons. So what have we learned? That the government will not always fully investigate every accident or incident. Did the throttle close somehow by vibration or did the pilot pull it closed inadvertently and not be aware of it. Did the pilot(s) perform emergency checklist procedures? Do you know what to do in an emergency situation? In the club Cherokee, in the event of power loss, the procedure is full throttle, full carb heat, boost pump on, and then, depending on the situation, change fuel tanks. Whether it is a Kitfox, a Cherokee, Cessna or Bonanza, you should have some of the basic emergency checklist procedures memorized for immediate action.

Also last October, at 8:20 AM a pilot in a Cherokee was doing touch and gos at Valkaria Airport. On the third landing, a deer ran out on the runway and struck the right wing root area. He reduced power to idle and applied brakes. The right brakes failed and the airplane veered off the runway and came to stop in the grass. No injuries but substantial aircraft damage. At FPR I have not yet seen a deer, but have seen turtles on taxiways and once on runway 14/32. In the surrounding area there are known to be wild hogs and alligators. One night about 10pm I drove upon two wild hogs on St. Lucie Blvd. They seemed somewhat unconcerned about my approaching truck. But I was glad it was the highway and not the runway that I encountered them. So please be careful of critters on the runways or taxiways of FPR and any other airport. Where I used to fly in the Midwest, many remote airports would have a standing notam for arriving aircraft to make a low approach to check for and 'chase off' any critters on the runway, especially at night.

Next month two more 'usual causes' accidents in our area.

Notes from Editor - Richard Chapman

Last month Harry Newbern told me that he passed his Sport Pilot written test, and was so excited that he forgot to tell me that Eddy Kemper also passed the test.

The Chapter's web site has been down for several weeks. I hope that it gets back up for this newsletter, as many of you view it from the web. I will have it posted on the 'back-up' site of: www.cypress-und.com/eaa908.htm if the chapter site is not back up.

Flying Club by Richard Chapman

The Cherokee's annual is scheduled for August 7 - 12. So seat repairs will be done at this time also.

Last month, I got the name of the new member wrong. So apologies to Finley Ricard, who goes by Rick Ricard.

One share is currently for sale.

Pilot Humor

from VHPA Florida Chapter Newsletter

Don't drop the aircraft in order to fly the microphone. An airplane flies because of a principle discovered by Bernoulli, not Marconi. Unskilled pilots are always found in the wreckage with their hand around the microphone.

If you push the stick forward, the houses get bigger. If you pull the stick back, they get smaller. If you keep pulling the stick back, then they get bigger again.

Hovering is for pilots who love to fly, but have no place to go.

The only time you have too much fuel is when you're on fire.

Flying is the second greatest thrill known to man. Landing safely is the first!

Engine TBO - continued

overhaul shop reported that all 12 cylinders were still within new limits, as was pretty much everything else. It was clear from the results of the teardown inspection that those engines could have gone considerably longer -- at least another 500 hours -- with no problem.

Those engines received minimalist (i.e., el-cheapo) major overhauls in 1990. The cylinders had their valves replaced; their barrels lightly honed, new pistons and rings installed, and were bolted back on for another run. I saved about $12,000 by not replacing the cylinders at overhaul, but I figured that there was probably no way these jugs would survive another 1,400 hours.

I figured wrong. Those engines and cylinders now have accumulated another 1,600 hours since the overhaul, and so those cylinders have 3,500 hours on them. I am just wrapping up my 2004 annual inspection as I write this. The compressions are all 75/80 or better, the oil consumption remains about a quart in 15 hours, the oil filters are clean, the oil analysis is excellent, and the engines are running as well as they ever have. I imagine I'll be flying behind them for a while longer (knock on wood).

This time around, I'm not even the slightest bit nervous about continuing to fly past TBO. I know that so long as I continue to keep a watchful eye on compression, oil consumption, oil filter inspection, oil analysis, temperatures and performance, I'll know when the engines are getting tired and it's time to overhaul them. That could be next year, or it might be five years from now. I'm not even going to try to predict how much more useful life those engines have left, but when the time comes to major them, they'll tell me.

I haven't yet decided exactly what I'll do when that time comes. Will I have the engines field overhauled again, or exchange them for factory-rebuilt engines? Will I recondition the cylinders or install new ones? Install TCM factory cylinders, Superior Millenniums, or ECI Titans? These are complex decisions that I discuss at considerable length in my Savvy Owner Seminar. In my own case, I'll make those decisions when the time comes, based on the best information available at the time.

But I can tell you one thing for sure: When those freshly overhauled or rebuilt engines are installed back in the airplane and it's time for me to get back in the air, *that's* when I'll be nervous

EAA Chapter 908
3100 Industrial Ave 3
Ft. Pierce, FL 34946