October 2000, Vol 30 No. 9

Carb Heat

NEWSLETTER

Hot Air and Flying Rumours
Vol 30 No. 9

Published by EAA Chapter 245 (Ottawa) P.O. Box 24149 Hazeldean R.P.O., Kanata, Ontario, Canada, K2M 2C3

October 2000

Inside:

Next Meeting:
Thursday October 19, 2000 8:00 PM
Canadian Aviation Museum

Our feature topic will be presented by **Uwe Stickel**
on his newly acquired **Buecker Jungmann**

President:	**Gary Palmer**	**596-2172**	**gpalmer@nortelnetworks.com**
Vice President:	**Pat Floyd**	**823-7236**	**floydp@navcanada.ca**
Ops , Publishing, Tools:	**Dick Moore**	**836-5554**	**rjmoore@uottawa.ca**
Membership, Webmaster:	**Wayne Griese**	**256-5439**	**wayner@igs.net**
Secretary:	**Curtis Hillier**	**831-6352**	**hillier@mosaid.com**
Treasurer:	**George Elliott**	**592-8327**	**gelliott@igs.net**
Editor:	**Charles Gregoire**	**828-7493**	**cbgregoire@sympatico.ca**
Associate Editor:	**Heidi Brault**	**828-7493**	**recpilot@rocketmail.com**
Young Eagles Coord:	**Russ Robinson**	**831-2485**	**russ.robinson@ec.gc.ca**
EAA 245 Website:	**http://eaa245.dhs.org/**		

President's Page
by Gary Palmer

Thanksgiving weekend saw our first glimpse of winter weather on the horizon. On Sunday, Jack Thorpe gave me a ride in his Fleet Canuck, and as I drove to the airport I was wondering how effective his cabin heat system would be. While shivering in the frigid breeze in my lightweight jacket; Jack appeared with a warm tuque, and broke the news that the Canuck did not have a cabin heat system; at least I wasn't going up in the Pietenpol. Once airborne, it wasn't too cold as the Canuck was relatively draft free.

Irving Slone, being a real glutton for punishment appeared later in the day ready to take the Pietenpol up; if only I would hand prop him. It turns out the impulse mechanism of a magneto doesn't work too well with 80 weight oil and 5 degrees C temperatures; at least it warmed me up, and we did get Irv airborne after a lot of mighty swings!

Glasair III burning up local skys.

Stan Ironstone successfully flew his gorgeous **Glasair III** on the last week of September and had more than five hours by the end of the week. Stan wisely had the first flight flown by a very experienced Glasair III pilot, who has since checked Stan out, along with a very capable local aerobatic instructor. Stan is looking forward to completing the test flight schedule, and getting to enjoy the fruits of his years of loving labour. Look forward to seeing Stan's bird streaking across local skies at an airport near you! Congratulations Stan!

Bill Argue is still awaiting his registration from Transport Canada for his **Pegazair** STOL aircraft. So while issuance of a flight permit has been sped up by RAA, it seems that Transport Canada misses no opportunity to drag their feet. . As has been noted by Rem Walker, it is vitally important to carefully read the very latest regulations to make sure that every T is crossed and I dotted if you are to avoid frustrating delays. Things don't seem to have changed much since I waited a whole summer (4 months) for the flight permit for my Lancair in 1991.

October Elections

A reminder that we are looking for new blood for the executive committee. If you are interested in joining the leadership team, contact Lars Eif, at (613) 837-6680. Lars informs me that he already has a couple of volunteers (thanks in advance guys!), and feels confident that very little arm twisting will be needed to fill out the open executive positions. Lars also ensures me the election process will be painless this year and leave lots of time for our featured speaker; **Uwe Stickel,** so don't worry about being pressed into service at the meeting.

October Elections

A reminder that Rem Walker is looking for a volunteer to attend CARAC meetings in Ottawa to represent EAA members concerns. Contact Lars Eif if you can volunteer for this low workload position.

September 21st Meeting

Dick Moore was his usual well prepared and entertaining self as he described the learning process he embarked on when he decided to re-upholster the seats on his C-150. Dick had a large number of photos and material samples with him. He also had a number of references, including web sites and a ***how to video*** reference he found on the web. If you are interested, you too can save a lot of money on one of the finishing jobs that most of us farm out.

Dick was also honoured with the **first President's award** for his many selfless contributions to the chapter and its members. His presentation was just the latest in a long string of contributions; well done Dick!

Buecker Jungmann featured at October meeting @ NAM

Our own **Uwe Stickel** has a new love in his life, a classic Buecker Jungmann that he recently flew home from Santa Paula in California, north of Los Angeles. This is the only Jungmann flying in Canada, and Uwe has graciously agreed to share the excitement of his 25 hr. cross continent flight home with us at the October 19th meeting. Be sure to make this meeting. Meeting time as always will be 8:00 PM start . See you there. **Gary**

The Ten Biggest Lies About Piston Aircraft Engines

by Mike Busch **mbusch@avweb.com**

This article originally appeared in the March 1998 issue of Cessna Pilots Association Magazine.

Lie #1:
Lycoming engines are better than Continental engines.
(Or vice-versa.)

I bought my first airplane 30 years ago. It was a Cessna 182 powered by a Continental O-470-R engine. Since then I've owned a succession of airplanes, and each one-quite coincidentally-was powered by a big-bore Continental. My engines have always made TBO and been relatively trouble-free. So it's not surprising that I'm something of a fan when it comes to TCM engines.

It's equally unsurprising that at least half the pilots and aircraft owners I meet are Lycoming bigots. They brashly state "I'd never own a Continental-powered airplane!" If you ask why, they'll tell you a series of anecdotal episodes about how their Lycoming-powered Turbo Saratoga made it to 1,000 hours past TBO, while their best friend wound up having to tear down the TCM factory reman in his Mooney 231 or Beech B36TC after just 475 hours.

Let's set the record straight. Lycoming and TCM engines are very similar designs using very similar technology and metallurgy. Both are horizontally-opposed air-cooled designs with bolt-together aluminium case halves and bolt-on cylinders with sandcast aluminium heads screwed onto nitrided steel barrels. Both use fixed-timed dual magneto ignition systems, and valve trains with overhead rocker arms, shrouded hollow pushrods, and hydraulic valve lifters. Both use similar compression ratios, similar RPM red-lines, and similar power-to-displacement ratios. And both have comparable records of reliability and longevity.

Certain problems tend to occur more frequently in one brand or the other. Continentals have a lot more crankcase cracks, head-to-barrel separations, and premature valve guide wear problems than Lycomings. On the other hand, Lycomings suffer stuck and broken valves and spalled cams and lifters much more often Continentals.

Some TCM and Lycoming models have better track records than other TCM and Lycoming models. For example, the TCM TSIO-360 series (used in Mooneys, Skymasters, and various other aircraft) tend to be more troublesome and maintenance-intensive than other Continentals. Likewise, the Lycoming O-320-H2AD engine has had a dismal history of cam and lifter problems when flown irregularly and operated in cold climates.

But while certain specific TCM and Lycoming models are problem-prone, it is simply wrong to make a general assertion that engines of either manufacturer are more reliable than those of the other. It's just not so.

Lie #2:
Turbocharged engines are troublesome, inefficient and costly.

When I learned to fly on the East Coast thirty-something years ago, turbocharging was a dirty word. Everybody said turbos were expensive, inefficient, maintenance-intensive, and problem-prone; it shortens TBO and increases operating cost drastically, and makes no sense unless you live in the mountains. Or so everybody said.

Well, everybody was wrong. I've owned, operated and maintained a turbocharged twin Cessna for the past eleven years. It's proven to be the most reliable airplane I've ever owned: reliable, efficient, and almost completely trouble-free. Both engines made it to 500 hours past TBO without ever having a cylinder off, and when they were finally majored, they turned out to be in great shape.

Most of the anti-turbocharging arguments you hear are bunk. For example, take the claim that turbocharged engines are inefficient. Now, it's true that most turbocharged engines have a lower compression ratio than their normally-aspirated counterparts (typically 6.5-to-1 vs. 7.5-to-1), and that the turbo will burn a bit more fuel at any given power setting. But specific fuel consumption is only part of the story. The other part is that airframes are much more efficient up at the higher altitudes that turbocharging allows.

For instance, by climbing from 6,000' to 12,000' and throttling back from 75% to 65% power, my Turbo 310 can fly 5 knots faster than a normally-aspirated 310, and do it at lower fuel flow. If I'm willing to use oxygen and climb to FL200, I can beat the non-turboed 310 by 25 knots with no fuel flow penalty. The normally-aspirated airplane is more efficient than the turbo only if you force both airplanes to fly at the same low altitude, and that's not a meaningful comparison.

How about the claim that turbocharged engines are much more expensive to operate and maintain? It's true that turbos are more vulnerable to abuse in the hands of a ham-fisted pilot. If your airplane is used for training or rental use and flown by lots of pilots, you probably don't want a turbo. But barring such abuse, my worst-case analysis indicates that a 300 hp turbocharged engine should cost no more than $10/hour more to operate than its normally-aspirated sibling. When you consider that the sort of aircraft that use such engines -- Bonanzas, Centurions, Saratogas, etc. -- typically cost $100 to $150/hour to fly, you can see that the difference is chump change

Lie #3:
Modern multi-viscosity oil offers superior lubrication and longer engine life than old-fashioned single-weight oil.

During the 70s and 80s, there was a dramatic shift from single-weight to multi-viscosity oils by operators of general aviation aircraft...due in large measure to very effective advertising campaigns by Shell and Mobil that touted their multi-vis products (Aeroshell 15W50 and Mobil AV 1) as the greatest aeronautical innovation since the nosewheel.

During the same 20-year period, there was a dramatic increase in premature engine problems in the owner-flown G.A. fleet. It was not a coincidence.

In contrast to "working airplanes" that fly almost every day, most owner-flown airplanes spend most of their lives in the chocks. The biggest enemy of their engines is not inadequate lubrication. It's rust.

Multi-vis oil simply does not provide as effective protection against rust as single-weight oil. The defining characteristic of multi-viscosity oil -- the fact that it doesn't thicken up at cool temperatures -- makes it a lousy corrosion inhibitor. During periods of disuse, multi-vis oil strips off cylinder walls and cam lobes much more readily than does thick single-weight oil, leaving those parts vulnerable to corrosion, followed by spalling and eventually destruction.

But what about the superior lubricating properties of multi-vis oil? Basically bunk!

It turns out that multi-vis oil is <u>not</u> a better lubricant than single-grade oil. It's actually a bit worse. The reason is that multi-vis oil is made by starting with a thin, single-weight oil stock and adding man-made polymers called "Viscosity Index improvers" that increase viscosity as temperature increases. However, such VI improvers are not lubricants, and their addition actually displaces a certain amount of lubricating base stock (on the order of 10%). In other words, there's more "oil" in a quart of single-weight oil than in a quart of multi-vis.

Now this is no big deal, since the lubrication demands of most piston aircraft engines are rather modest (compared to automobile engines, for example). What is a big deal is the fact that single-weight oil does a better job of protecting engines against rust during period of disuse. That's why we've long recommend single-weight oil for any engine that doesn't fly at least once a week.

Fortunately, after two decades of multi-vis mania, it now appears that more and more G.A. operators are starting to recognize the shortcomings of multi-vis oil and are switching back to single-weight. An increasing number of top-rated overhaul shops are now recommending the use of single-weight oil.

Lie #4:

If you can't fly regularly, at least be sure to turn over the prop by hand every week or two to redistribute the oil.

Now there's a really dumb idea! I wonder who first came up with it?

Engines that don't fly regularly are vulnerable to rust because the oil film that protects their steel parts from corrosion begins to strip off after a week or two. Gravity is the culprit -- oil flows from top to bottom -- and so the areas at greatest risk are the tops of cylinder bores, the tops of cam lobes, and so forth.

Now suppose you turn over the prop by hand. Does this "redistribute the oil?" Sure it does! It scrapes oil off the top of the cylinders and accelerates its flow downhill. The same is true of cam lobes and lifters.

Now I realize full well that at least one of the engine manufacturers recommends turning over the prop by hand periodically in its "flyable storage" recommendations. I still maintain, however, that the only way to replenish the protective oil film is to fling large quantities of oil around the innards of your engine with great vigor. And the only way to do that is to run the engine at high RPM...preferably by flying the airplane attached to it. Turning over the prop by hand just won't cut it.

Lie #5:

The less oil an engine burns, the better.

Get a few aircraft owners get together over a few beers, and inevitably the conversation turns to oil consumption. "I'm only using a quart in 30 hours," one will say. "That's nothing," brags another owner, "I don't have to add any make-up oil between 50-hour oil changes!" The owners doing this bragging probably don't realize that they probably won't make it to TBO without a costly mid-term top overhaul! It turns out that ultra-low oil consumption is often a bad omen when it comes to cylinder longevity.

For a cylinder to make it to TBO, it must be protected from metal-to-metal scuffing by the piston rings. This protection comes from a film of oil that coats the cylinder barrel and causes the rings to "hydroplane" instead of scuffing the barrel.

Now, if the cylinder barrel is properly coated with oil, it's inevitable that some of this oil will be burned up in the combustion process. That's why a certain amount of oil consumption is perfectly normal.

Ultra-low oil consumption indicates one of two things: either the oil film is too thin, or the oil is not reaching the critical upper portions of the cylinder walls where the compression rings reverse direction at top-dead-center (the so-called "ring-step area"). Without adequate lubrication, there's a high risk of metal-to-metal contact between the compression rings and the cylinder wall.

Experience seems to indicate that oil consumption lower than about a quart in 20 hours may not bode well for long cylinder life. Barrel wear in the ring-step area becomes likely, leading to rapidly deteriorating compression and accelerating oil consumption at 500-1000 hours.

While low oil consumption has always been acknowledged as a sign of a tight, well-broken-in engine, there is strong evidence that a quart in 30 or 40 hours may well be too much of a good thing.

Lie #6:

The cooler the engine's oil and cylinder head temperatures, the better.

It turns out that the "cooler is better" notion isn't quite right. While excessively high temperatures are bad for your engine, low temperatures are no great shakes, either.

Take oil temperatures. Most of our airplanes have oil temperature gauges that have a green arc running from 75°F to 240°F, with a red-line at 240°F. Now, 240°F is way hotter than we'd like to see. Keep in mind that the oil temperature probe is usually located at the place in the oil system where the oil is coolest, often near the outlet of the oil cooler. So if the gauge reads 240°F, the oil is probably hitting close to 280°F at the hottest point in its circuit through the engine. That's hot enough to cause petroleum-based oil to oxidize and break down at an accelerated rate. We've either got to bring down the oil temps, or change the oil very frequently.

On the other hand, oil temperatures lower than 170°F or so on the gauge present a different problem...namely, that the oil is probably not reaching the boiling point of water at the hottest point in its travel. Why is this important? Every time we shut down the engine, a slug of water condenses inside the cooling engine and runs down into the oil sump. If we don't get rid of this water the next time we fly, there will be a progressive water build-up inside the engine. That water will mix with the sulphur and nitrogen by-products of combustion to form sulphuric and nitric acid. And that will start eating away at the innards of our engine. The solution is to make sure the oil gets hot enough to boil off the entrapped water, so that the resulting steam passes harmlessly out the breather.

Oil temperatures of 180°F to 200°F on the gauge are hot enough to get rid of this water, yet cool enough not to accelerate the breakdown of the oil. So that's ideally where we'd like to see our oil temperature gauge in-flight.

What about cylinder head temperatures? The CHT gauge on a TCM engine usually has a green arc from 200°F to 460°F, with a

red-line at 460°F. Lycomings generally have a CHT red-line of 500°F. Once again, red-line CHT is way too hot for optimum engine longevity. At those temperatures, the aluminium cylinder heads are vulnerable to cracking, and the exhaust valve guides are vulnerable to accelerated wear.

On the other hand, CHTs below about 300°F create another problem: lead fouling. Our engines operate on avgas that contains large amounts of tetraethyl lead (TEL). Even so-called "100LL" contains enough TEL to keep the EPA awake at night. The purpose of TEL is to enhance the octane (detonation resistance) of the fuel. Unfortunately, it also can cause lead deposits in the engine, particularly on spark plug electrodes and in piston ring grooves.

To prevent such lead fouling, avgas contains a "lead scavenging agent" called ethylene dibromide, whose job it is to dissolve excess lead and let it pass harmlessly out the exhaust pipe. However, ethylene dibromide doesn't do its scavenging job unless combustion temperatures are fairly high. That's why lead fouling problems tend to emerge when CHTs are below about 300°F.

Ideally, we should try to keep CHTs in the 350°F to 400°F range as much as possible. That's cool enough to keep the cylinder heads and valve guides happy, but hot enough for effective lead scavenging.

Lie #7:
Aggressive leaning results in burned valves and detonation.

Fear of the red knob is one of the most pernicious areas of misinformation among general aviation pilots. Most pilots operate way too rich most of the time, and do so because of the mistaken belief that leaning will harm their engine. The result is usually trouble: fouled spark plugs, accelerated exhaust valve guide wear, and stuck exhaust valves.

Lycoming has long authorized leaning to peak EGT at any cruise setting up to 75% power. TCM authorizes leaning to peak EGT up to 65%, and its latest recommendations even endorse lean-of-peak operation for many big-bore engines, provided the engines will run smoothly when operated that lean.

Contrary to popular belief, aggressive leaning doesn't cause burned valves. Most burned valves are the result of excessive valve guide wear or valve stem contamination.

Aggressive leaning doesn't cause detonation, either. Most of our engines are incapable of detonation at cruise power settings, provided that we don't exceed CHT red-line or try to burn contaminated fuel. Furthermore, recent tests on Lycoming engines by ASTM revealed this fascinating result: detonation is most likely to occur at a mixture setting 11% richer than stoichiometric (i.e., substantially richer than peak EGT).

Lean as aggressively as the book allows. For Lycomings, that means peak EGT at all cruise power settings to 75%. For Continentals, lean to peak EGT up to 65%, 50°F rich of peak at 75%. For turbocharged engines, also limit TIT to 1600°F.

Lean during all ground operations except for engine start. It is particularly important to lean for taxi and runup. Since EGT is usually off-scale at idle power, the best method is to lean for peak RPM at idle.

Lie #8:
It's bad to cruise at high manifold pressure and low RPM ("oversquare").

The old saw about never allowing MP to exceed RPM/100 is bunk! Fortunately, this one seems finally to be moving toward a well-deserved death, after decades of being accepted as Gospel by countless well-intentioned pilots.

TCM and Lycoming authorize cruise operation at 1 to 3 inches "oversquare" for most normally-aspirated engines, and allows 9 to 12 inches "oversquare" for most turbocharged engines. Check the cruise charts in your POH or, better yet, obtain the operator's manual for your engine.

Operating at minimum RPM and maximum MP (within the allowable envelope) actually helps your engine last longer. Low RPM operation provides numerous benefits: better cylinder compression, lower frictional losses, improved propeller efficiency, cooler-running valves, lower EGTs and TITs, and a quieter cabin.

Cruise at the lowest RPM and highest MP that the book allows for the percentage of power that you desire. You usually have several possible RPM/MP combinations to choose from at lower altitudes in a normally-aspirated airplane, and at virtually all altitudes in a turbocharged airplane.

Lie #9:
Continuing to fly an engine beyond the manufacturer's recommended TBO is dangerous, illegal, and could void your insurance coverage.

Hogwash!

First of all, it's important to understand that TBO is an actuarial figure...the manufacturer's best guess about how long a typical engine will be able to operate before needing an overhaul. Some engines won't make it. Other engines will sail past TBO in great shape and provide many hundreds of additional hours of reliable operation before teardown is warranted.

Think of published TBO as being similar to published human life expectancy. We don't expect all humans to live to that age and then keel over. Some will die before their time, others will outlive their children. Certainly, we don't arbitrarily euthanize people when they reach the average expectancy age!

Published TBO has no legal significance for the majority of us who fly under FAR Part 91. For commercial operators under Part 135, TBO is theoretically "compulsory" because TCM and Lycoming publish their TBO figures in the form of a service bulletin, and Part 135 operators are required to comply with service bulletins. However, a Part 135 operator may apply to his local FSDO for a TBO extension, and such extension are routinely granted by the FAA. For example, one company that operates a huge fleet of Cessna 402s (published TBO is 1600 hours) has FAA approval to go to 2400 hours before overhaul.

Your aircraft insurance carrier could care less whether your engine is past TBO. Your policy simply requires that your aircraft and its pilot be legal under the FARs. As we've seen, published TBO has no legal impact on Part 91 operators. Part 135 operators need to ask the FAA's permission before flying past TBO, but such permission is commonplace.

We recommend that you overhaul your engine when it gets tired, not at some arbitrary number of hours.

Lie #10:
A factory reman is better than a field overhaul, because only the factory offers a true "zero-timed" engine.

While it's true that a factory rebuilt engine comes with a zero-time logbook while a field overhauled engine does not, it's not for the reason you may think.

When you have your engine overhauled by Mattituck, RAM, T.W. Smith, Victor, or whomever, that engine retains most of its original parts, as well as its serial number, data plate, and engine logbook or other maintenance records. The overhauled engine you get back is legally the same engine you sent in, all cleaned up with lots of new parts.

On the other hand, when TCM or Lycoming receives a runout core from a customer, that engine loses its identity. The data plate is removed and destroyed. So are the logbooks. The case halves are cleaned up, inspected, and added to a big pile of reusable case halves. The crankshaft is cleaned up, inspected, and added to a big stack of reusable cranks. The same is true of camshafts, rods, accessory gears, and so forth. Those reusable parts become "anonymous" because they're no longer associated with any particular engine serial number.

Now, when TCM or Lycoming builds up a factory rebuilt engine (colloquially but incorrectly referred to as a "factory reman"), it pulls some "anonymous" case halves from one pile, an "anonymous" crankshaft from another pile, and so forth. When the engine is completely assembled, it gets a new data plate, a new serial number, and a new logbook.

The logbook starts out at zero time-in-service. Why zero? Because there's no other reasonable figure to put in the logbook. The case halves are certainly not zero-time, but there's no record of how much time they've accrued. The crankshaft may not be new, but there's no record of how much time is on the crank, either. And so on.

In short, the "zero-time" logbook that comes with a factory rebuilt engine in no way implies that the engine is "newer" or "better" than a field overhaul. All it implies is that the reused components in the engine are of unknown heritage...nobody knows how long they were in service prior to the time then were cleaned up, inspected, and reused in your engine!

Maintenance Corner
by Charles Gregoire

Bill Peppler provided the following information via e-mail relating to aircraft maintenance:

> Although this comment is of greater importance to AMEs, owners of amateur-built aircraft should also take note.
>
> A "fine" of $250 directed against an AME, was upheld by Canada's Civil Aviation Tribunal (CAT) during a recent hearing. The AME was asked to pay this monetary penalty because he did some minor work on a visiting aircraft and failed to make an entry in the log book As a basis for the fine, the following quote is taken from the official report of the hearing and may be found in CAT File No. #C-2033-35. It refers to the provisions of Paragraph 571.03(a) of the Airworthiness Manual Airworthiness and states: "... this paragraph clearly requires that all maintenance, whether of an elementary nature or not, be entered into the applicable technical record, in respect of the task performed by the person who performed the work."

Another maintenance related note I got from Olav Peterson relates to a thread of emails he forwarded to me which occurred between himself and COPA on the subject of maintenance schedules (i.e. Certified A/C assumed in this discussion). Olav raised a concern regarding the wording of the applicable CARs (i.e. Canadian Aviation Regulations) which states "AN INSPECTION OF AN AIRCRAFT SHALL BE PERFORMED WITHIN A 12-MONTH PERIOD". Before proceeding any further with explaining Olav's point I thought I'd provide a quote of the applicable section of the CARs below which, incidententally, are all available on the Web at the following URL (http://www.tc.gc.ca/aviation/regserv/carac/CARS/html_e/doc/index.htm):

625.86 Maintenance Schedules

Information Notes:

(i) The phrase "no person shall conduct a takeoff, or permit another person to conduct a take off" is used in the regulations to clearly emphasize an aircraft owner's responsibility to advise any person operating his/her aircraft of any maintenance that the aircraft might require pursuant to the regulations.

(ii) CAR Part I defines "Owner" as the person who has legal custody and control of the aircraft.

(1) Pursuant to CAR 605.86, all aircraft, other than ultra-light or hang-gliders, shall be maintained in accordance with a maintenance schedule, approved by the Minister, that meets the requirements of this Aircraft Equipment and Maintenance Standard 625.

(2)

(a) As applicable to the type of aircraft **at intervals not exceeding 12 months** (my note here), Part I and Part II of the Maintenance Schedule detailed in Appendix B of these standards are approved by the Minister for use on other than large aircraft, turbine-powered pressurized aeroplanes, airships, any aeroplane or helicopter operated by a flight training unit under CAR 406, or any aircraft operated by air operators under *CAR* Part VII.

(b) Owners of non-commercially operated small aircraft and balloons must also comply with Appendix C with respect to out of phase tasks and equipment maintenance requirements.

(c) Owners of non-commercially operated small aircraft and balloons who choose to comply with Parts I or II of Appendix B as applicable, and Appendix C, need not submit any documents to the Minister for formal approval. The schedule is considered to be approved for their use by the Minister. Owners need only to make an entry in the aircraft technical records that the aircraft is maintained pursuant to the maintenance schedule.

Information Notes:

(i) Part I of Appendix B of these standards applies to small piston engine aircraft and small helicopters not operated in a flight training unit or in a commercial air service, and is performed on an annual basis (i.e. at intervals not exceeding 12 months).

(3)

(a) As applicable to the type of aircraft, and when performed in accordance with the guidelines specified therein, at intervals not exceeding 100 hours air time (end of quote….)

The following excerpt from Olav's thread of emails best summarizes the concern he raised:

> I have a problem with the current scheduling of private, general aviation aircraft for Annual Inspections. It is to be performed within a 12-month period.....or less by a month, but not more. Which means that each year the due date moves ahead by a week or two or even a month....and, in time, one finds that the annual, which was initially conducted in, say, October, will now have to be done in, say, March!!!! Why can this rule not be amended to provide a +/- 30 day margin so that an owner can accommodate for bad weather or other unforeseen obstacles? The current rule will move the inspection date ALWAYS forward!
>
> Is there a logical explanation to what we have now? Why do we want to have a rule which forces the inspection date to be advanced, year after year?

Needless to say a rather lengthy thread of emails followed. After much to and fro explaining and clarifying the following amendment to the CARs was proposed by Kevin Psutka of COPA:

My initial reaction would be to suggest that a similar approach be taken as with medical renewals. The medical is valid until the beginning of the thirteenth month following the month in which the inspection is performed. That way, there is flexibility to perform the inspection within the entire month and maintain a constant renewal month, unless of course the inspection was permitted to lapse into the thirteenth month. The wording in the CARs is:

- (CAR Standard 424.04 (3)(c)): "The period of validity of the medical examination is calculated from the first day of the month following the date of the medical declaration or medical examination." Also, there is provision for extenuating circumstances to extend the date as follows:

- 424.04 (4): "Extension of Medical Validity

- Under extenuating circumstances, the medical validity of a pilot permit or license shall be extended by the Minister for a period not to exceed 60 days following the valid to date of the Medical Certificate provided that:
  (a) the application is made while the medical certificate is valid; and (b) the applicant can show that there has been no reasonable opportunity to take a medical examination within the 90 days prior to the expiry of the Medical Certificate."

- If similar wording was introduced for inspections, what risk could it introduce? I realize that there could potentially be a 29-day extension to the current requirement (if an inspection is done on the first day of a month it would not be required again until the last day of the same month next year) and I suppose someone could play the system and routinely carry out inspections on the first day of the thirteenth month, thereby effectively having a rolling thirteen month inspection schedule, but I am not aware on the medical side that this is prevalent now.

The current requirement is effectively requiring, over time, more inspections than every twelve months as intended. I am willing to introduce a change…….(end quote)

As far as I know this action has still not been pushed through. Consult Olav Peterson if you would like further information or clarifications or if you would like to make comments.

Another maintenance note that may be of interest to some of our readers is the fact that Dick Moore has put together a little static balancing stand for balancing small aircraft wheels. This can be especially useful to owners with nosewheel landing gear which can be subject to excessive shimmy should the wheel be out of balance. Small lead weights, 1/4 ounce each with peel off self adhesive backing, are available and in some cases can be used to attach to the wheel. The stand consists of two large cone shaped nuts which can be tightened to hold the wheel by its bearings on a threaded shaft. The threaded shaft is supported in the stand on each end with small low friction bearings. Before using the stand, one must remove the wheel from the aircraft. The bearings can then be removed and soaked in Varsol and dried with compressed air to degrease them. With clean non-greased bearings the wheel can be set-up in the stand and the static balance checked. Basically the heavy side of the wheel will rotate via gravity to the low point of the stand. One can then experimentally balance the wheel by attaching weights on the side opposite the heavy side. Note that these weights can be temporarily attached using two-sided tape. When the wheel is balanced it should not rotate via the force of gravity when holding the wheel at any point in its rotation and letting go. The weights can them be securely attached via self-adhesive backing or with a little bit of JB Weld. If necessary let the epoxy cure then re-grease the bearings and re-install the wheel. Consult Dick if you require further information.

Classifieds

Place your ads by phone with Charles Gregoire @ 828-7493 or e-mail to cbgregoire@sympatico.ca Deadline is first of the month. Ads will run for three months with a renewal option of two more months.

Wanted:
Set of Cleveland 500x5 wheels and brakes (have set of 600x6 Cleveland wheels, brakes and tires to trade for the 500x5's
Lionel Robidoux 613-738-1066 10/2000

Airplane for Sale:
Davis DA2A, 295 TT, C85 90 SMOH, All Metal, Low wing, Nose gear, Flaps, ADF, KX-170 Radio $14,000
Jim 613-839-5542 07/2000

Articles Wanted

I am always interested in receiving submissions for this, your, Newsletter. You may bring articles to the monthly meetings or mail information to the post office box or send me an e-mail attachment at:

cbgregoire@sympatico.ca

EAA Chapter 245 Membership Application

NEW:___ RENEWAL:___ DATE:__/__/__
EAA NUMBER:.....
EXP Date:__/__/__
NAME:.....
ADDRESS:.....
CITY/TOWN:.....
PROV:.....PC:.....
PHONE:(.....).....H (.....).....W
AIRCRAFT &
REGISTRATION:.....
.....

OTHER AVIATION AFFILIATIONS:
COPA:____ RAAC:____
OTHER:_____

Annual Dues: January 1st to December 31st. (porated after March31st for new members/subscribers).
Associate Member ____: $30.00 Newsletter plus Chapter facilities
Full Member: ____: $55.00 Newsletter, hangar, workshop, tiedowns
Newsletter subscriber ____: $30.00 Newsletter
Note Associate and full members must also be members of EAA's parent body in Oshkosh WI, USA

Make cheque payable to:
EAA Chapter 245 (Ottawa)
Mail to - P.O. Box 24149, 300 Eagleson Road, Kanata, Ontario, K2M 2C3