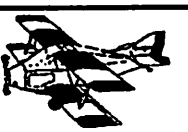
Skywriter

Monthly Newsletter of the Calgary Ultralight Flying Club

March 1990

View From Above

by Paul Hemingson



The February meeting was a near sell-out. We might soon have to put up bleachers. Thanks for coming out. Good group, good talk, good fun.

Chris Huhn, one of our newer members, but no stranger to the air, told us about his December 1989 Cross-Canada Flight in a Cessna 182. This is a remarkable achievement for an 18 year old pilot. The planning, preparation, self-discipline and judgement he showed in completing this 52 hour flight exemplifies what can result from good training. Chris is smitten with the 'flybug' and one can only wonder what his next exploit may be.

During the latter part of the meeting a "Confession Session" was held. The basic idea here, is to confess about something stupid you did. The rest of the members learn from these mistakes...it's almost as good as making them yourself. Some of these tales make Super Dave's antics look tame. Ron S. rediscovered an ancient method of making expensive toothpicks from his propellor, by creating a new opening in an otherwise well-aired hanger. Watch those handpropping procedures. Fred's harrowing tale of encountering severe turbulence and wind shear on his first solo flight was yet another example of the fickleness of the Winds of the West. Jim's maiden test flight reconfirmed the importance and validity of weight and balance. Paul talked about his experiences in landing "into the sun". This is an excellent way to lose your orientation, your eyesight and your airplane, all at the same time.

The Club seems to be flush with funds now, so we're planning some social/flying events this spring/summer. More on this later, as the snow goes and sun stays. Watch the newsletter for announcements.

Wayne Winters' new Merlin is flying..and quite smartly too! Check it out for yourself almost anytime at Indus. Jim's newly reconditioned machine is near complete and ready for a testflight.....no audience please. Russ recently revamped his Hiperlight - the racy red paint job turns a lot of heads. Dave Clement's 5151 is on hold for a year or so due to other obligations. Paul Pontois sent a card and is still flying his Skypup. He enclosed a cheque to renew his membership and will forward a newsletter article to tell us all about flying in Quebec. Got some local news to share?-- give me a call.

Some new potential members showed up at the February meeting. Let's make them welcome. Introduce yourself to any new faces and help them get off on the right wing. These new members need info and it's nice to see existing club members give them some one on one. Also, don't forget to use the excellent library that Bernie Kespe keeps for the Club. This is a good place to get free winter reading material.

The Alberta Aviation Council invited us to participate in their 3rd Annual Safety/Education/Training Workshop held in Red Deer on Feb. 24-25. Details elsewhere in this issue.

Next Meeting

Don't miss the April 5th meeting. Our speaker will be Moe Baile from the Aviation Safety branch of Transport Canada, in Edmonton. Moe always gives a very enlightening and entertaining audio/visual presentation on flying safely.

Mark your calendar now so you won't forget!

AAC Get SET Successful

The Alberta Aviation Council's Get SET Convention, held February 23, 24 and 25 in Red Deer, was a great success according to organizers. The main presentations and forums were held on Saturday, February 25 and consisted of several morning information and safety presentations by Transport Canada and an afternoon panel presentations by various Aviation Organizations. CUFC was represented at the convention by Jim Creasser and Bob Kirkby.

The morning was highlighted by Moe Baile's safety presentation during which he reported that there were 39 general aviation accidents in Western Region last year. Of these, 8 involved fatalities. Moe's underlying theme for the presentation was "Do not accept accidents!". There is no acceptable level and we must continue to prevent them.

Cathy Fletcher gave an interesting update on the new regulations for certifying and registering airports. Under the new regs there will only be two classifications of airports: Certified

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Letters to the Editor

I was asked by our dedicated editor, Bob Kirkby, to write the club and tell about my experiences with my Sorrell SNS-8 Hyperlight, which as most of you know is a single place, fully enclosed, negative stagger-wing, biplane. I felt I should share the events leading up to the rebuilding of the plane, the actual rebuilding and the before and after flying results.

In July of 1988, I decided to take the day off work and fly up to Pine Lake for the weekend. Leaving Calgary in the morning, after checking with the weather office, I made a pretty much pleasant, uneventful flight to the Olds-Didsbury Airport where I refueled. At this point it began to get a bit windy and in the distance I could see some gray clouds forming about 20 miles west. I decided to call the weather office to confirm that they still expected the day to be picture perfect flying weather, which was again confirmed. So off I went on the final leg, headed north-east to Pine Lake.

About 15 minutes out of Olds-Didsbury, cruising at approximately 50 mph, I began to run into turbulence at which point I realized how fast those clouds were approaching. I decided rather than turn around and head back to Olds-Didsbury, which would have taken me directly into the weather, I would try to out-run it in hopes of getting to the lake ahead of the weather front fast approaching. So, I increased speed to full throttle (approx. 70 mph) and continued on to Pine Lake. It became apparent after about another 10 minutes that I was not out-running the storm as the turbulence began to get worse and worse. What ensued was about 15 to 20 minutes of absolute terror. I encountered turbulence that felt as though it was going to rip the wings off, associated with up drafts and down drafts that seemed to be winding my altimeter up and down like a yo-yo.

I was so frightened by this time, that as I approached Pine Lake, I began looking for the closest, safe field in which to land. The first one appeared to be a pasture which was surrounded by trees. As I approached the field for a low level fly-by to inspect it, I encountered mechanical turbulence coming over the trees that nearly inverted the plane. So I attempted once again from a different angle to get into the field and found myself almost inverted again. By this time, I realized that the only place I was going to land was in a nearby wheat field, which I knew was going to be rough, as the wheat had grown to full height. In preparation for the landing I flew over the field looking for the best spot and decided to land at the bottom of a rolling hill in the field. This, hopefully, would be shelter enough from the wind so as to avoid having an expensive kite in these gail-force type winds.

As I went around and made my final approach, I killed the power to avoid damaging the propeller and engine, and did a dead stick landing attempting to mush the plane onto the ground to minimize my forward airspeed. As anticipated, the moment the wheat grabbed my main gear, the plane did an abrupt stop on its nose, damaging the cowling and engine mounts and bending the lower wing tips.

Fortunately, I was not injured and the plane after being dragged out of the field following the storm, was still flyable and able to make the return trip back to Calgary at the end of the weekend.

I learned several things that day which I will summarize here, and then write about the rebuild and the before and after performance next month.

1. I learned that the aviation weather office is not always correct and that a thorough understanding of micro-meterology could have helped me avoid a day of near disaster.

2. Even if the weather office is correct, they may not understand the needs of light airplane pilots and should be informed as to the type of aircraft when requesting weather information.

3. Winds out of the west, followed by cumulus type clouds, cannot only be an extremely dangerous combination, but can also approach at astounding speeds. Light aircraft, of our type, may not be fast enough to out-run or go around a small localized storm.

4. When encountering potentially rough weather, start looking for the nearest landing strip, rather than being determined to get to the planned destination.

5. The mechanical turbulence created over and around objects during periods of moderate to high winds, should never be discounted and extreme caution should always be taken in and around areas where there is the potential for mechanical turbulence.

6. And lastly, the airworthiness and strength of the Sorrell Hyperlight was well tested on this particular day. I thank the Sorrels for building such sturdy and capable little aircraft, however, I hope to avoid ever being caught in a similar situation and have learned to have a great deal more respect for the weather.

- Russ Sirocek

Skywriter is the official publication of the Calgary Ultralight Flying Club and is published 12 times per year. Articles and letters to the editor are very welcome from any readers. Address correspondence to:

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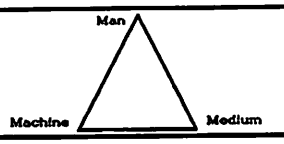
Meetings of the Calgary Ultralight Flying Club are held the first Wednesday of every month at the R.C.A.F. Association, 110 - 7220 Fisher Street S.E., Calgary at 7:30 PM.

Safety Corner

by Paul Hemingson



Hot, High and Humid

The single most important factor influencing aircraft performance is beyond your control. It's called DENSITY ALTITUDE. This month's article explores the effect of density altitude on take-off distance, rate of climb and angle of climb. In this article I will try to take some of the mystery out of this often maligned term.

Do you ever wonder why your aircraft seldom seems to perform up to the manufacturers' claims? Instead of the 200-foot take-off run, you find your run is actually closer to 350 or 400 feet. Instead of the advertised 1000 foot per minute climb-rate, you measure only 700 fpm. After a while you might begin to suspect the manufacturers' claims, or your own piloting skills. But often, the culprit is density altitude, expecially here in the High West Country. We all learned about it in theory, but experiencing it is the real thing.

What's the Standard?

Manufacturer performance claims are usually based on "standard conditions". The Standard Conditions are sea-level altitude, temperature of 59 degrees F. and pressure of 29.92 inches of mercury. Figure 1 is a KOCH chart that shows the effect of temperature and altitude on aircraft performance. I have dashed a line from 59F to sea-level altitude. Note that the line intersects the middle column to show zero effect on Takeoff Distance and Rate of Climb. This is the standard against which density altitude (and aircraft performance) is measured. But we seldom get standard conditions.

Nonstandard? Your Standard?

Figure 2 is another Koch chart that shows a typical non-standard situation. I have assumed we have a standard pressure (29.92) and hence pressure altitude equals airport altitude. The example shows an airport then, with a ground elevation of 4000 feet, which is typical for the Calgary area. The dashed line of Figure 2 is connected to a temperature of 24C. - a nice summer day in this area. Now look at the middle portion of the Koch chart. The line crosses the axis to show a 100% increase in Takeoff Distance; i.e., it's double what it would be at standard conditions. Note also that the Rate of Climb will also be around 50% less; i.e., a rate of climb of 1000 fpm at standard conditions degrades to 500 fpm at these conditions.

Using Figure 2 again, lets contrast the typical summer's day with a typical winter's day. The dotted line connects the same 4000 foot airport elevation with a temperature of -15C. Note that in this case, we show hardly any degradation of performance. This explains why your machine positively wants to leap into the air when winter flying. It's GREAT! The Rate of Climb is rocket-like.

Other factors also need to be considered. In the summer, the airfield you're using might be soft or grassy which will further degrade the takeoff roll. In the winter, the same runway is likely frozen hard and enhances your take-off. The direction

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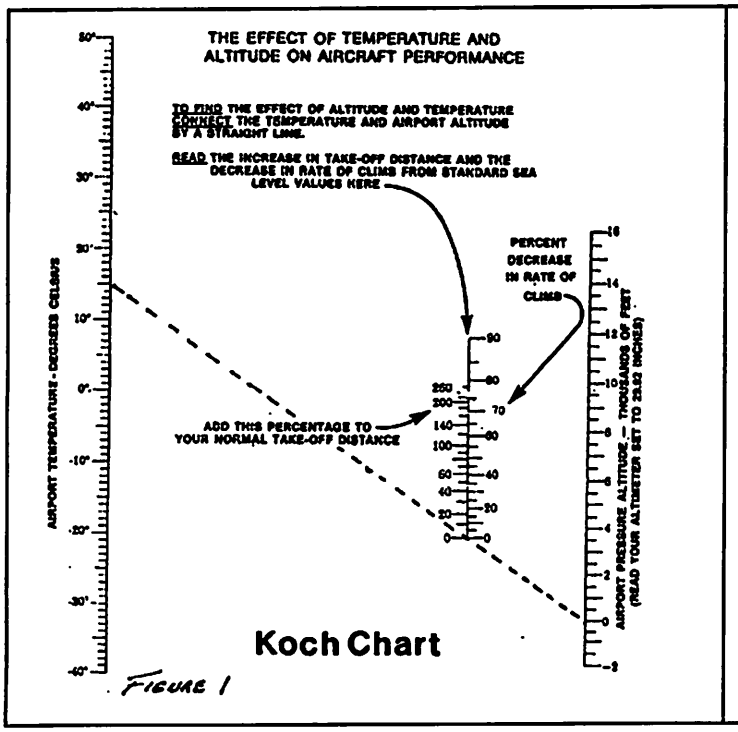
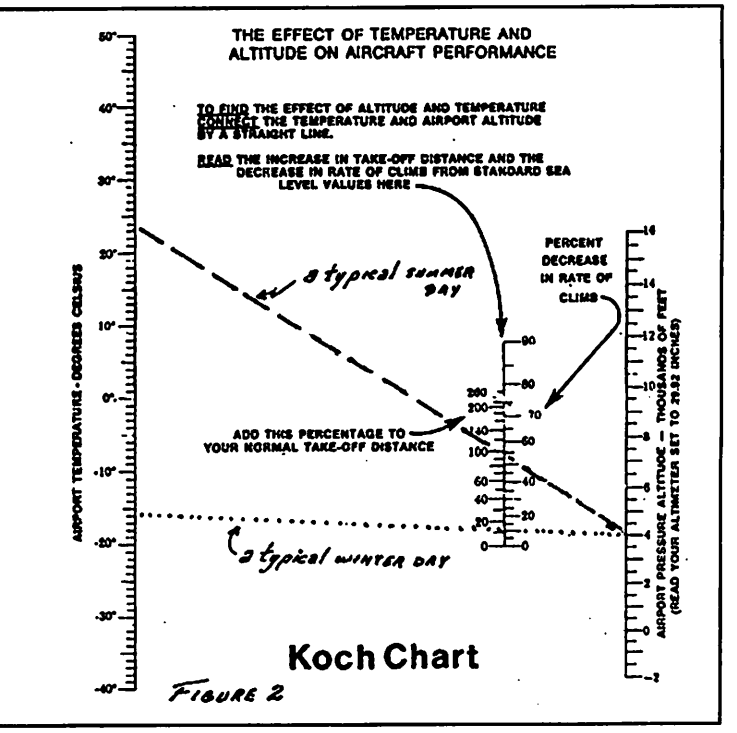




Classified

ABC Ballistic Chute - never used, hermetically sealed, excellent, new $1900., offers. Paul Hemingson 931-2363.

Beaver RX-550 - 2 place, Rotax 503 air-colled engine, pitot airspeed, altimeter, tach, EGT, CHT, Hobbs, hydraulic brakes, wheel pants, custom paint, ballistic chute, wing covers, less than 200 hrs., always hangared, never damaged. Hangar space available at Black Diamond. First $10,000. offer flies it away. Willing to sell shares. Call Gord Keegan, H. 242-7791.

Fisher FP101 - fantastic flying ultralight yet looks like a conventional aircraft. New, fly it away. $7000. Ralph or Wayne Winters 936- 5347 or 238-0406.

Boom Mic - M-87 low impedance dynamic microphone, fits most headsets, new, 2 available, $25. each. Bob Kirkby 226-0720.

Braid for shielding spark plug leads and ignition wires, $2. per foot. Bob Kirkby 226-0720.

Hagar Wheels - 1 pair of 6" Hagar wheels, new, $40. Bob Kirkby 226-0720.

Chinook Parts - brakes, fuselage landing back, some damage to a wing, make an offer. SkyMaster 335-3306 or Gord 293-7990.

Ivo Prop - 3-bladed, ground adjustable pitch, 56" diameter, composite blades, L.H. tractor or R.H. pusher, new, $400. Jim Creaser 226-0180.

Quicksilvers - MX-II, Rotax 503, 100 hrs, inst. pod, parachute, needs fabric, $4000.; also MX, Rotax 377, 75 hrs, needs fabric, $2500. Garry Miller 343-7082, Red Deer.

Rotax 377 - rebuilt in Vernon, belt drives, 2 sets of pulleys, complete exhaust. Offers. Russ Sirocek 274-8526.

(Safety Corner continued)

and velocity of the wind is also a major factor, and one which we intuitively consider, regardless of density altitude.

Another thing to think about besides Rate of Climb, is Angle of Climb. Your Angle of Climb will also suffer at high density altitudes. Because the air is less dense, your true speed is higher. If your forward speed is higher you will cover more distance across the ground, per foot of vertical climb, consequently the Angle of Climb decreases. As a rule of thumb, your airspeed increases 2% for each 1000 foot increase in altitude above standard conditions. For example, at 4000 feet ASL, the airspeed indicator showing 50 mph could be corrected by 8%, to give an actual airspeed of 50+8% which equals 54 mph.

In summary, the denser (colder) the air, the better the performance at a given altitude. Or conversely, the lower the airport elevation, the better the performance at a given temperature.

The causes of the decreased performance at the high density altitudes are normally described as being:

1. Decreased engine efficiency, especially without any form of mixture control. You cannot lean-out your engine so it runs richer at high density altitudes, and is therefore not putting out maximum power.

2. Propellor efficiency-decreases in the thin air.

3. Airfoil efficiency decreases; to get the same lift you will have to fly at higher angles of attack.

Because density altitude affects the performance so much, I have included a 'wallet-sized' version in Figure 3. Cut it out and paste it in your logbook or whatever. Remember to check it from time to time, expecially if you're feeling really hot under that helmet and want to get airborne quickly to cool-off.

While it's true that the manufacturer usually quotes his performance data relative to standard conditions, a good safety rule to follow would be to calibrate these specs for you and your conditions...ie temperature, pressure, runway conditions, winds and pilot skill.

So you want to be a test pilot?

by Jim Creasser

Understanding Your Bing

For those of you that didn't attend your March meeting, and missed the CARB Clinic, here is some information on the Bing carb used on Rotax Engines. For those of you that attended the meeting, this will be a reference and reminder.

The most common problem I hear about is mid range hesitation. You are on final and appear to be a little high and a little fast, but carry on until at 50 feet you have burned up half the runway, so decide to go around. You jam the throttle ahead and nothing happens. This scenario should not be allowed to happen and following is the solution.

Understanding how the slide carb works, I think is important. So here is what happens. The right air/fuel mixture at any throttle setting is very important to your engine. As well as fuel to burn and oil to lubricate is also part of the process of proper carb setting.

our carb has to provide various mixtures of fuel/air at different R.P.M's, for instance - at idle about 1 to 10, at full throttle about 1 to 16. This is accomplished by three seperate systems in the carb. First the pilot system or idle circuit as we called it in Auto-carbs. This consists of the pilot jet - a fixed jet to meter the fuel and an air regulating screw or air mixture screw. This circuit affects air/fuel mixture from idle to about 1/4 throttle.

Automobile carb idle mixture screws adjust fuel, whereas on Bing carbs it is an air adjustment, so think opposite. Turning out makes the mixture leaner and vice versa. To set this adjustment, first be very careful, engine must be running, turn mixture screw (small brass screw next to the large idle speed screw) in until idle is rough, then slowly turn out until idle is smooth. It helps to watch your tachometer to set this adjustment.

The next circuit we will call "mid range", from 1/4 to 3/4 throttle. This is controlled by the jet needle and the eedle jet. Confused? The jet needle is needle and you guessed it, the needle jet is a jet. The jet needle is attached to the shoe valve or piston as Rotax calls it. As the throttle is opened, the needle rises out of the jet and allows more fuel to slip up and past the tapered needle, where it mixes with air being sucked into the cylinders. This needle has three adjustable positions (3 grooves and a clip). With the circlip in the top groove, the needle is late rising out of the jet which gives a lean mid-range and the opposite if the clip is in the lower groove. With variable needle tapers and different size holes in the jet, infinite adjustment is possible. BUT, you can make your mid range work with the parts you have now.

Back to that hesitation on overshoot. You must determine if your hesitation is from too much fuel or not enough. The easy way to determine this requires you have access to your choke. It can be done on the ground and that's what I meant at the beginning when I said "it should not be allowed to happen".

Standing with access to throttle and choke, with aircraft tied down and wheels blocked. Warm engine and leave at idle for 20 - 30 seconds, then accelerate smoothly but quickly. If the speed doesn't pick up right away add choke with throttle at full open. If engine continues to bog, it was too rich already and the needle needs to be lowered. If engine picks up, it was too lean and the needle needs to be raised. If full adjustment in one direction doesn't cure the problem entirely, you might look for other possibilities; such as air cleaner restriction, float level too high, etc. If everything else is O.K., then you might consider a different jet and or needle.

The third system is the main jet, from 3/4 to full throttle the jet needle is all the way out of the needle jet and right below it is the main jet. A brass jet with a pre-determined hole in it which allows the right amount of fuel to supply the engine with the correct air/fuel mixture for maximum R.P.M. and power. The main jet supplied with your engine should be the right one for altitudes of 0 to 6000 feet. If you encounter density altitudes of over 6000 feet, your engine will run a tad rich, but rich is better than lean. I recommend you don't change your main jet unless you have a definite rich problem at full throttle, as would be indicated by spark plug colour. Black is not beautiful, but very rich. There are other problems that cause richness at full throttle, so be careful on your decision to change your main jet.

I said there were three systems and each one uses another system, the slide valve. At idle, the slide is all the way closed, well almost, it is resting on the idle adjustment screw, which raises it a little. You old U.C. pilots (old, as in experienced) remember cutting a little square notch out of the slide, this allowed a little more air/fuel mixture to get by the closed shoe valve for idle, and is still found on the new carbs of today. As the throttle is advanced, the valve opens and allows more air to pass through the venturi, which in turn picks up more fuel. The problem usually found with the slide valve is a travel problem, not opening all the way. To check, open throttle to full open with air cleaner removed, stick finger in and up under slide valve and push up, valve shouldn't move, if it moves up - your throttle lever cable system needs adjustment. The other misunderstood part of the Bing is the choke circuit which is not a choke system, but an enrichening system or

(continued on page 6)

(Test pilot continued)

a "make it richer to start" device, the same result as a choke, but instead of starving or choking the air, it provides more fuel. When the engine is cold, the fuel will not vapourize as quickly and therefore needs more to work with.

The other area of misunderstanding is the vent tubes. These must not be changed as tube length change could siphon fuel out of your float chamber and cause a lean condition, and you all remember about stir fry. The other adjustment possible is the float level or fuel level in the float bowl. By running your engine, stopping, removing fuel line from the carb, putting your finger over the inlet fitting so the residual fuel can't flow into the bowl, remove clamp and bowl carefully and note the level of the fuel. This level should be between 1/2" and 9/16" from the top of the bowl. By very gently bending the little brass lever that rests against the needle valve, you can set your float or fuel level. Too high a level can cause wandering R.P.M. at a given throttle setting. Although this wandering problem may also be a tuned exhaust problem which we don't have a solution for as yet.

I hope this information helps you to keep your Rotax running perfectly. If not, feel free to call me for advice.

(Get SET continued)

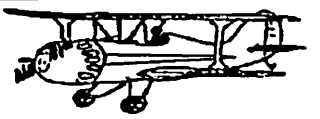
Airports, which are civil airports and/or those used by air carriers, and Registered Aerodromes which covers all the rest. Certified Airports will be inspected annually and must measure up to a set of standards, while Registered Aerodromes will be visited every three years and measured against a lesser set of standards. If you have a private airstrip it will be your choice as to whether or not you want to register it. Registration means a listing in the Canada Flight Supplement, among other things.

The afternoon panel gave the representative of each participating organization an opportunity to speak for 5 minutes about their organization. (This, as it turned out, out not enough time for any of the speakers.) Participants were: Alberta Aviation Council, CARES, Alberta Flying Farmers, The 99's, Flying Clubs of Alberta, Alberta Aerobatics Association, Recreational Aircraft Association, Calgary Ultralight Flying Club, Alberta Soaring Council. The Alberta Free Balloon Society representative was unable to make it. Jim Creasser gave a very nice presentation for CUFC. After the presentations a number of people stopped at the display table set up for CUFC to find out more about Ultralights and to see what Ultralight pilots really look like.

All-in-all the convention was well worthwhile and hopefully next year we will be able to participate in even greater numbers.

Editorial

by Bob Kirkby



New Regs

As we get closer to the implementation date for the new regs (possibly January 1, 1991) it might be a good idea to review the proposal once again. The information contained herein is extracted from an article by Dave Loveman in the February edition of Canadian General Aviation News.

The new weight limits for ultralights will be:

Single place: 628 lbs
Dual place: 1058 lbs.

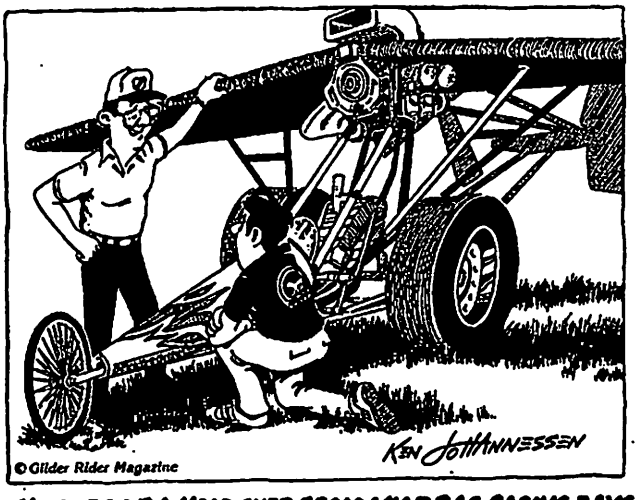
Existing aircraft may be flown under current regulations for a period of five years. After this, any two-place may still be flown, but can not be used for training or passenger carrying, unless updated.

An aircraft may be updated into the new regulations by the owner requesting certification from the manufacturer and re-registering. If this is not available, the owner can make application for re-registration through a group of knowledgeable individuals, yet to be defined, who will recommend acceptance or rejection of the application.

For new aircraft entering the market, the manufacturer will supply a proof of compliance form for regisration on both factory-built and kit airplanes.

The third type will be amateur-built aircraft built from kits or raw materials where the manufacturer or builder does not wish to supply a proof of compliance. These can be licenced (presumably after inspection) but can not be used for flight training. Apparantly they can be used for passenger carrying, however.

This is a very brief synopsis of the new regs and is intended to bring you up to date, somewhat. A reprint of Dave Loveman's article is available at our regular meetings. If you would like a copy contact me.



IT'S SORT OF A HOLD OVER FROM MY DRAG RACING DAYS.