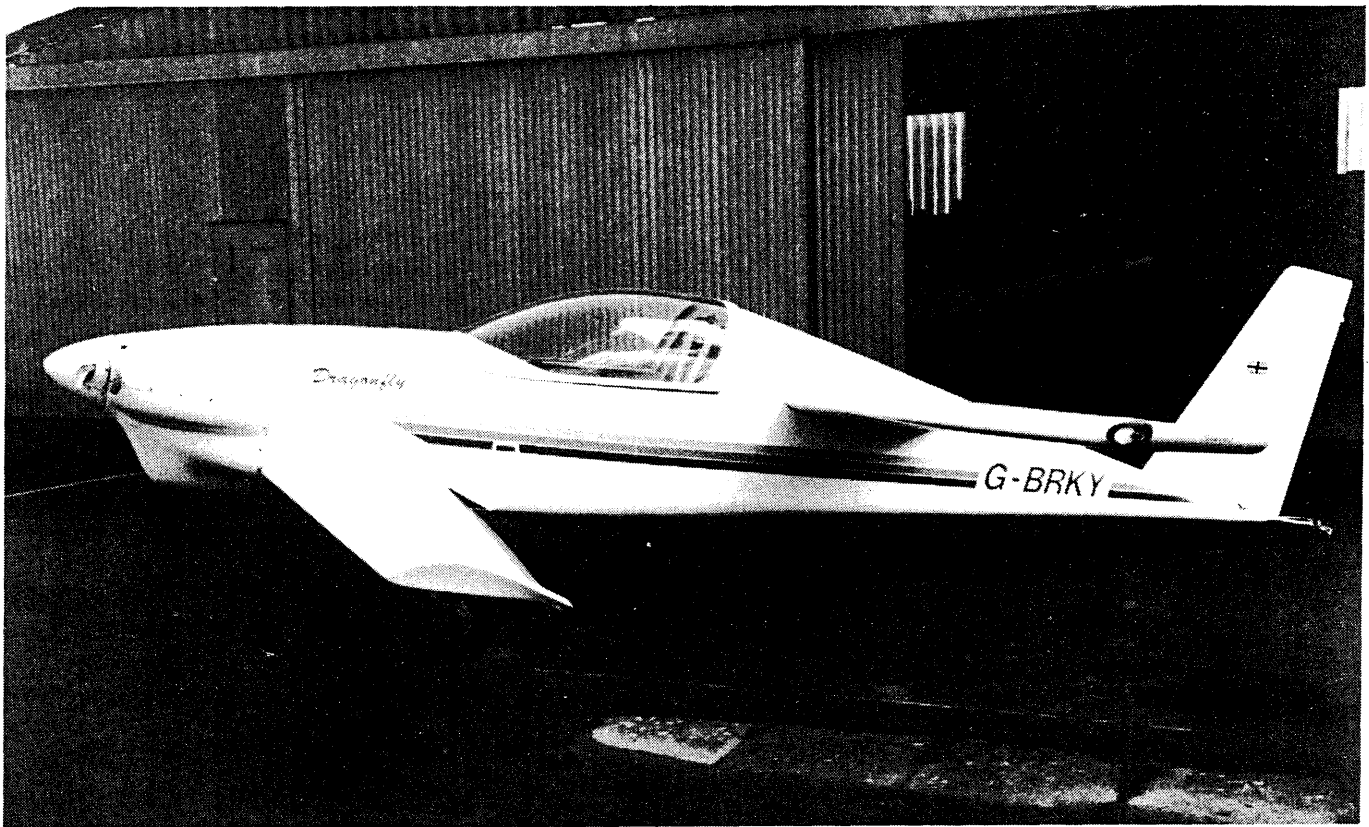


DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICAL VOICE OF DRAGONFLYERS ALL OVER THE WORLD

VOLUME 68

NOVEMBER - DECEMBER 1996



Gerry Price's Mark II Dragonfly of the United Kingdom

Hello Spud and Fellow Dragonflyers,

I've been taking some photos of our house-building project, so there was some spare film in the camera; seemed sensible to fire off some shots and the negatives are en-

closed. I think they will give you a feeling for my color scheme, but if you more, just let me know (*I've always been very found of Gerry's Dragonfly paint scheme and had asked him for more pictures - Spud*).

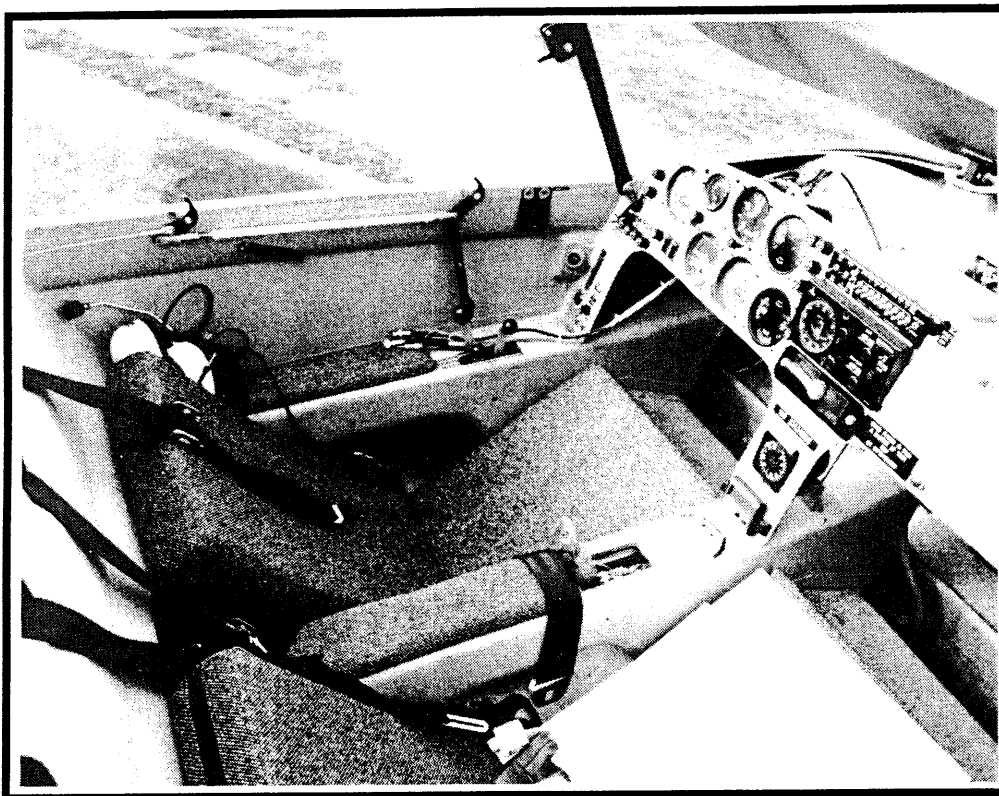
A word about my choice of scheme: Way back when I was in Eloy collecting parts for the project with my wife, and we took a peek at Justin's airplane. Right away, I knew that his choice of layout was right - nicely understated, letting the beautiful lines of the Dragonfly do

the talking, but subtly emphasizing them. We felt that the black/dark gray/light gray were just a bit downbeat for us, and we needed color; I'm a 'red' person, Theresa's a 'blue' person, and you can see who won! The paint is a two-part epoxy which is used for boats: It was suggested by my good friend, Neville Eyre, who you'll usually see at the British Europa display booth at Sun N' Fun and Oshkosh, and it is absolutely bullet-proof! Expensive, and hard to spray on, but nothing has touched it, and the finish comes up perfectly every time with just a hose and sponge. The stripes are produced on a pre-spaced roll for boats, and the logos were computer-cut from the same material, and just pressed-on from the backing-sheet.

Now to the airplane itself: Two of us own the airfield, some of which you can make out in the photos. It's a good place to enjoy yourself and relax, but it's grass with 1500 foot of runway, though the approaches are very good - no obstacles. I say 'but', because the Dragonfly was

never really designed for this kind of field, so I have been asking it to do something outside it's original design spec's., and it has done the job very well for the past four years, though I never did manage to get out of there with a passenger! As you know, I had problems with my original Hapi 1835cc, so I built-up a Great Plains 2180cc engine, and I can only praise Steve Bennett for the design of this conversion, and for his high standards, as this is a superb engine, but (that word

again!) it's a VW, and that means reliable, cheap, easy to maintain, also old technology and a little on the heavy side. The engine really pushes out the power, though I never have found the perfect carb for it, and it really has made the airplane perform away from the ground - most of all I'm confident with it, and that tends to be important one's enjoyment! The downside is that it still can't get two people out of my airfield with a safe margin, and it's brought the C of G forward some, which is not desirable, as it loads the canard a little more, and raises the approach speed a little.



To shorten a long story, I was flying out of the field last year with a 15 knot crosswind, and a failing lift-pump (fuel pump) to the header-tank, which meant that I felt it important to get back and install a new one - no real urgency, as the header gives a good 45 minutes of fuel, but I wanted to be at base to do the work needed. There was a lot of turbulence low down on the approach, and I landed a little fast,

got on the a little early and dinged the prop, slowing-down by snaking, which put quite a load on the gear, and didn't do the wheel pants a lot of good, either! Apart from the pants, there was no damage, and I put my spare prop on, did a check run on the engine, and all was well, except for the little voice saying "Look, this is a nice airplane, but it won't be for long unless you make some changes to it." We're building a new house, as you can see from the photo's. (That's going to be the pool, honest!), and we seem to be flying pretty hard on the 747 (Gerry is a Boeing 747 Check Captain for British Airways), so I've grounded my Dragon-

fly, and will start on the following modifications very soon.

1. The new style hoop gear, with Cleveland wheels/brakes/master cyls./park-brake valve. This must be the way to go for all Dragonfly's now, as the Viking design puts stress in the canard, and the legs will become difficult to obtain, I feel sure. The hoop-gear is

simple, easy to make, though our certification authority for homebuilts here in the U.K. wants it installed similar to the way it is in Long EZ's with pickups allowing the center part to flex instead of bonding the whole width of the fuselage, and it is strong and flexible enough to allow safe operation from my grass field.

2. Len Dyson's airbrake: Part of the problem that led to my prop-ding was the very shallow approach angle. This just isn't a problem when operating into

a 'real' runway, but I need to be able to 'aim' at the first 20% of my runway, and put the airplane on it, in order to stop without getting the heart-rate up to high. Prior to the incident, I hadn't really used the brakes much, but the slight forward C of G, higher approach speed in the turbulence etc. was enough to cause problems. and Len's brake will assist in making the airplane more 'normal' on the approach, and it seems to be a really good strong, simple design.

3. Aileron trim/servo tabs: The airplane is not ideally harmonizes at high speeds (= Cruise Speed!), as the ailerons really so firm up, and the spring-bias trim system doesn't help, as it puts an artificial load in. The modified system, as used by many Dragonfly's now, would seem to solve the problem.

4. Rear turtle-deck hatch: Most people seem to put this in now, and I feel it to be a 'must', as it allows for the storage of light articles which cannot really be put elsewhere (but please restrain them out of the way of the aileron circuit!), and it allows access the aileron and trim bellcranks, access which is near-impossible without a hatch.

5. Spring-damping on the tailwheel pushrod: A neat, desirable idea which came up in DBFN some time back (issue DBFN #45) - desirable because it keeps jarring turning shocks out of the rudder circuit, and is simply better design/engineering than the original.

6. Re-engine & prop: The most important is last! If I can reduce the weight of the airplane by, say 50 lbs., bring the C of G further back, get 85, or even 100 horses up front, and combine all of this with a prop which is more efficient than the VW would ever be able to achieve, then, **surely** I will have finally made it to the perfect Dragonfly?

Is this a pipe-dream? Not at all: The Rotax 4-stroke pushes out around 85hp, and the turbo'd version gives a constant 100 hp, with 115 hp available for 5 minutes. This light engine, at around 130 lbs., and it drives a Warp Drive 3 blader at around 2200-2300 rpm max., which gives this big diameter prop it's best efficiency, and efficiency equals thrust, which equals getting off the ground quicker, with a higher cruise speed, once the pitch has been sorted-out. Of course, nothing comes for free, and this is not a cheap engine, but it may well prove ideal for my requirements.

There is another alternative in the Norton Rotary, but this requires a liquid-cooling system, and is I think, even more expensive than the Rotax: Even so, it is worth researching, and I will give it a chance.

So there you have it: None of my comments should be taken as saying that this is a tricky, or dangerous airplane, and I stand by what I have previously written about the Dragonfly in DBFN - in my experience, it is a safe, viceless airplane which gives fantastic performance for the minimum money, but it is a little different. If I were to operate the Dragonfly from my local airport with it's 2500 foot tarmac (hard surface), I would probably make no basic changes, but I am 'moving the goal posts', in terms of what I want (need) the airplane to do, I cannot expect to do that for free! In the meantime, thanks to you and Kris for making the newsletter happen, and my best wishes to you both, and to all Dragonflyers in this new up coming year.

All The Best,

**Gerry Price
27 Tamarisk
East Preston, West Sussex
United Kingdom BN16 2TE**

● Arizona Fly-in!

Hear YE Hear YE,

To all Dragonfly and Q-birds owners, builders, flyers, and wanna be's, The Arizona Dragonfly Builders invite you to our 3rd annual fly-in to be held on March 15, 16 1997 at Phoenix's Deer Valley airport (DVT) located in the northern part of Phoenix, Deer Valley has 2 runways of 5,000 and 8,000 ft ea. and a very cooperative tower the likes to work with strange planes.

Contact Matt Gunsch or Don Stewart for more information

Matt Gunsch Home: (602) 252-4720

Hanger: (602) 582-8344

E-mail: N329DF@AOL.COM

Don Stewart Home: (520) 778-6988

E-mail: siinc@juno.com

● Cowling Construction Tips

Hi Spud, I've had quite a few people how I did my cowling for my Norton insatalltion: I found that the best way for separation is to use urethane varnish, 3 coats on the plug. Let it dry completely (overnight at least) and then coat it liberally with that green alcohol mold release sold by Wicks or Spruce. When that is dry, glass up. Separation is a little scary at first, but as soon as you get the first separation, the fiberglass comes smoothly off. I did not find waxing to be of any great value. I assume that you are building the plug out of foam. Fill the foam with fast dry lite pre-mixed spackle. DO NOT do what Bingalis says and spray primer or paint over that.. It will eat the foam away and you will have to almost start over. let each coat of varnish dry before the next one goes on. This is important as it fills in the pores and seals the plaster from the glass. Good luck.

Rich Goldman - Illinois

CONT'D ON PAGE 10

AN UPDATE FROM VIKING & A PLANS UPGRADE!

Greetings from Viking Aircraft, Inc.!

Several things have happened this year. For one thing Viking Aircraft's address did not change for the second full year in a row! I have been with the company I now work for 2 years, and this has been a real blessing for us and Viking. Because we have been in one place now for 2 years, it has become a lot easier for people to reach us. We are even on the internet now and our address is: viking@pensys.com. We have found that this has been a great help to our customers overseas.

To give you a little idea about new builders that have come on board, we have had 50 people in 21 states and 8 different countries buy plans to build the Dragonfly this year. We have had 12 Dragonfly projects change hands to get closer to completion.

We have also out-lived some of our suppliers. Aircraft Spruce and Specialty acquired Alexander Aeroplane and now the three-ply cloth is available from Aircraft Spruce and Specialty in both locations. Clark the company who made the sheet foam for the fuselage sold their product line to General Plastics. With the exception of the scored foam all product is still available. General Plastics has a product that can be used in place of the scored foam called FR-4300 Thermo-plastic foam (1-206-473-5000). Another product used by some builders is called Ester Core manufactured by Divinicell (1-214-228-7600). Call if you need details we can mail you some information.

Hexcell sold the division that makes the epoxy that we used. With the help of many who are in the composite aircraft business, we found a epoxy replacement for the Hexel Safe-T-Poxy. It is Aeropoxy PR-2032. It is available at both Aircraft Spruce (1-800-824-1930) and Wicks Aircraft (1-800-221-9425).

We have also come up with a new spar lay-up schedule that will allow the gross

weight of the Dragonfly to increase to 1,300 lbs. To be able to fly at this weight you must have a power plant large enough, at least 80 horsepower plus. As you will read the upgrade did not originate from a design deficiency, but from the fact that many Dragonfly's are being built heavier and are already flying at that weight.

For any new people who are thinking of building the Dragonfly, we are now sending out a gift certificate with your plans for the amount of the \$259.00, that is redeemable when you order a complete pre-fab kit. We can extend this offer to those of you who have purchased the plans in this last year. Call Viking aircraft for details.

For those of you who were not at the fly-in in September we do have a newly printed errata sheet that is easier to read. If you would like a copy please send a S.A.S.E. (legal size) and we'll get it right out to you.

Remember if you want to talk about technical things call week-nights 6:00pm to 8:30pm and week-ends. Or you can call during the day to talk with Robin for ordering and non-technical information.

Wishing you all a great New Year!
Patrick and Robin Taylor
Viking Aircraft, Inc.

NEW GROSS WEIGHT INCREASE!

For the benefit of those who were not at this years fly-in in Kansas, I want to lay the foundation for the wing and canard update.

Over the past few years I have

noticed that a majority of the DRAGONFLY's being finished have been heavy and are being flown heavier, and in some case flown faster. This has greatly concerned me. Even though we have never had an in flight structural failure of either the wing or the canard, we felt if this trend continues it would be only a matter of time before some type of incident could occur. In order to prevent this we have worked with our stress engineer to run the numbers and to come up with a lay-up schedule which would allow the Dragonfly to keep it's present load limits up to 1300 lbs. (At present there are DRAGONFLY's flying this heavy now.) This upgrade will be used on all wings and canards being constructed from this point forward. Yes, even for the builders who are going to build and fly their DRAGONFLY's at designed loads. You would be surprised how many projects change hands before it gets into the air. The original builder may want to keep it light, but who knows about the second, third, or fourth builder or owner.

The following sheets show the new lay-up schedules for the wing and canard spars. Keep in mind that due to the increased spar cap thickness (especially on the canard) the foam in the spar cap area must be lowered to prevent the spar cap from protruding above the airfoil profile. You will also note that the outboard section of the wing must be cut to allow the wing shear web to increase in length.

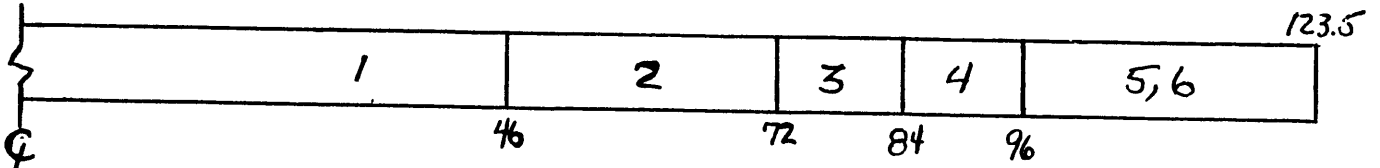
As you use this information to build your aircraft I would appreciate any feedback from you builders so I can pass on this information to future builders. Thank you for your help and cooperation!

Patrick and Robin Taylor



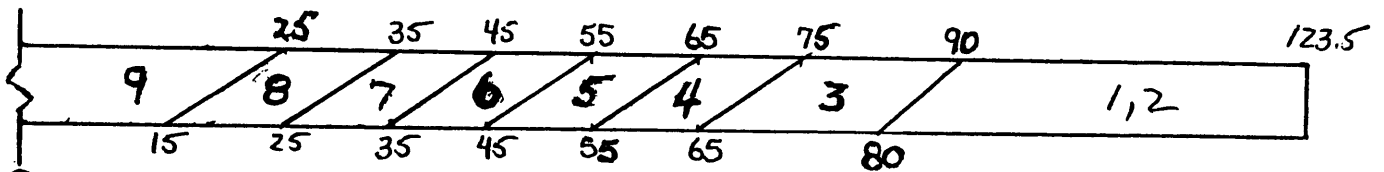
REVISED CANARD SPAR LAY-UP SCHEDULE

SHEAR WEB



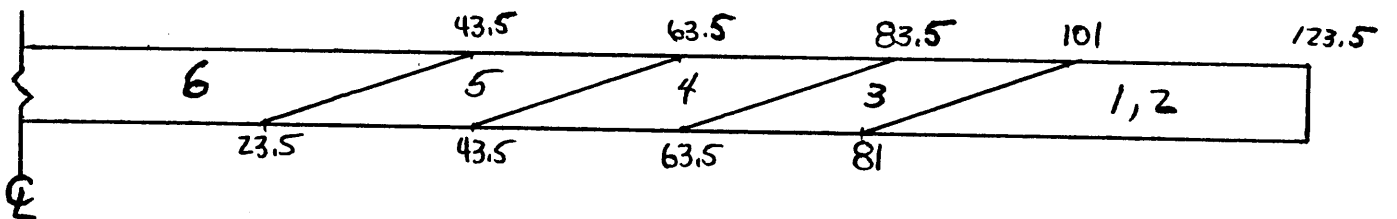
LAYER 1	BL46L-BL46R	FACE ONLY
LAYER 2	BL72L-BL72R	FACE ONLY
LAYER 3	BL84L-BL84R	FACE ONLY
LAYER 4	BL96L-BL96R	FACE ONLY
LAYER 5 & 6	BL123.5L-BL123.5R	WRAP-AROUND ONTO CAP PLATFORM

UPPER CAP



LAYER 1 & 2	BL123.5L-BL123.5R	NO TAPER
LAYER 3	BL90L-BL90R	10 INCH TAPER INBOARD
LAYER 4	BL75L-BL75R	10 INCH TAPER INBOARD
LAYER 5	BL65L-BL65R	10 INCH TAPER INBOARD
LAYER 6	BL55L-BL55R	10 INCH TAPER INBOARD
LAYER 7	BL45L-BL45R	10 INCH TAPER INBOARD
LAYER 8	BL35L-BL35R	10 INCH TAPER INBOARD
LAYER 9	BL25L-BL25R	10 INCH TAPER INBOARD

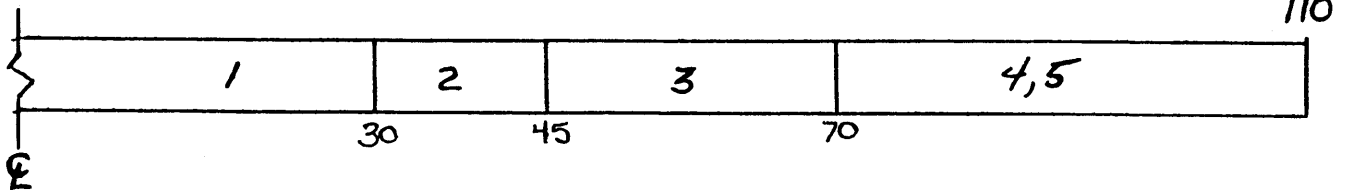
LOWER CAP



LAYER 1&2	BL123.5L-BL123.5R	NO TAPER
LAYER 3	BL101L-BL101R	20 INCH TAPER INBOARD
LAYER 4	BL83.5L-BL83.5R	20 INCH TAPER INBOARD
LAYER 5	BL63.5L-BL63.5R	20 INCH TAPER INBOARD
LAYER 6	BL43.5L-BL43.5R	20 INCH TAPER INBOARD

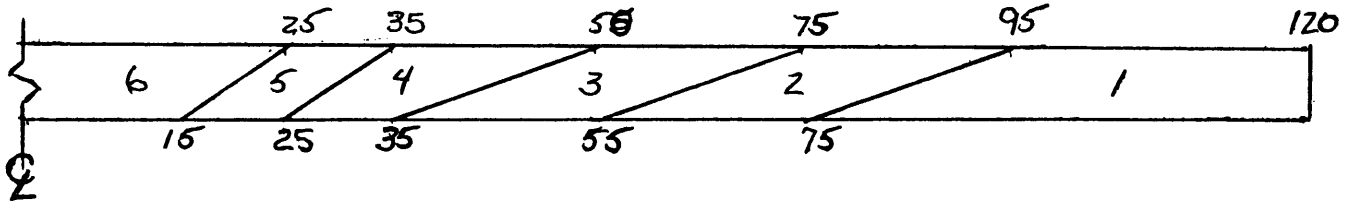
REVISED WING SPAR LAY-UP SCHEDULE

SHEAR WEB



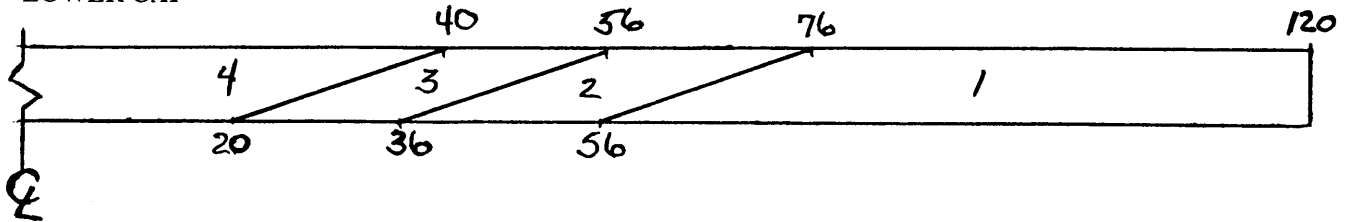
LAYER 1	BL30L-BL30R	FACE ONLY
LAYER 2	BL45L-BL45R	FACE ONLY
LAYER 3	BL70L-BL70R	FACE ONLY
LAYER 4&5	BL110L-BL110R	WRAP-AROUND ONTO CAP PLATFORM

UPPER CAP



LAYER 1	BL120L-120R	NO TAPER
LAYER 2	BL95L-BL95R	20 INCH TAPER INBOARD
LAYER 3	BL75L-BL75R	20 INCH TAPER INBOARD
LAYER 4	BL55L-BL55R	20 INCH TAPER INBOARD
LAYER 5	BL35L-BL35R	10 INCH TAPER INBOARD
LAYER 6	BL25L-BL25R	10 INCH TAPER INBOARD

LOWER CAP



LAYER 1	BL120L-BL120R	NO TAPER
LAYER 2	BL76L-BL76R	20 INCH TAPER INBOARD
LAYER 3	BL56L-BL56R	20 INCH TAPER INBOARD
LAYER 4	BL40L-BL40R	20 INCH TAPER INBOARD

THOSE WILD AND CRAZY GUYS FROM FLORIDA!

Hello Spud,

Its those sun-struck guys in Cocoa Florida. We have made some progress and thought we might bring everyone up-to-date.

The fuselage is getting together. All appropriate bulkheads are in except for the instrument panel. The engine mount and reinforced transom are done. The main and aux (rear) fuel tanks are glassed in and leak free. The turtle deck is in and shaped, front turtle deck is done and shaped but not installed yet. We decided to glass in the canard drag bulkhead and all structural reinforcement at the same time. The forward transom of our little fat whale is seriously "stout" and ready for the bow gear.

We decided at the very beginning to strengthen the fuselage wall in the "bow gear" attach area by continuing the 3/4" foam re-enforcement aft of the canard drag bulkhead, about 8 inches or so. An extra ply of 10 oz. cloth was added to the walls and floor throughout this area also. We have finished the gear and are getting ready to install in onto the fuselage, but I'm getting ahead of myself. (*I really like this mod for the bow gear - Spud*)

Since we discovered that the "scored" 1/2" urethane foam is no longer available (We told Viking Aircraft about this problem) we selected an alternative foam and developed a scoring process for it. The foam is Divinacell Urethane core, 4 lbs./ft³ (a replacement for Clark Foam). The scoring process is simply a Dremmel Moto-tool mounted on the little router attachment that they make for it. We marked radial score lines (about 1" apart or so on the foam) and used a 1" X 2" stringer as a guide fence. The actual "cutting" was done with an 1/8" drill bit set to about a 1/4" deep cut. ZIP!!! The whole scoring process (including figuring it out) took about two hours, though, we found it to be a two man task. The attachment of foam to the frame was with fishing string and tiny splinter of

wood at each place to keep the line from cutting through the foam. We got the exact shape required and experienced virtually no damage to the foam during the removal from the frame. This is the only way to do turtle decks!

We also decided to move the seat backwards 2 inches farther than the plans call for. This helped to accommodate the new, "wider," "Low -cut: gull wing door frame. (note: My beloved wife and co-owner "attempted" to get out of a fellow builder's Dfly fuselage. She couldn't! Panic!!!!. So came to be born the "low" cut doors.) The amount and weight of re-enforcement necessary in the remaining side walls is frightening. At least ten pounds was added to the fuselage to make the gull wing doors strong enough to work (Sigh). The rear fuel tank is installed. It is connected into the forward tank via a 2" diameter fiberglass tube. It all seems to work correctly, but what a nightmare to get it fitted and installed and leak proof. If you ever want to see what 20 gallons of bright green water looks like draining out of a half done fuselage just ask for the photo's. Its a truly depressing sight. Now that it is all done and figured out, we can laugh at ourselves and our expert 20-20 hindsight.

We widened the front of the fuselage by an additional inch. Strange.....We knew exactly how wide the Lycoming O-290G-X was a the start of this project. But... It got "wider" as it sat on the engine stand. Our poor little airplane is looking more like a tadpole now than a beautiful Dragonfly. (*They all look like that at this stage - Spud*).

We constructed a bow style gear from the plans I purchased a few months ago. The shape is the same but we made a radical change to the materials content. If it works, we

will let everyone know what and how we did it. We have shaped and glassed the bottom of the fuselage, rear turtle deck, and "the arch" (the area forward of the wing and before the gull wing doors. The instrument panel supports and the center consoles are done also. In short we are getting ready to close out the fuselage primary construction and start on the secondary construction and control systems.

Other stuff we are doing:

Designing / building an adjustable, rudder / hydraulic brake peddle assy . Dual master cylinders, up to 4 inches of front-to-back travel in the location of the peddles, and rocker style pedals. You gotta see this to believe it! Our design calls for 3/4 dia x .90 thick wall 304-L SS pipe to be welded and gusseted. It will be "stout" to say the least. (Here in Florida we play a little game called "Dodge the Turtles on the Runway" that tends to have you on the brakes a lot) It will all be ergonomic (of course) and follow the path that is natural to the arc of the foot. Brakes will be tied into the rudder peddle arc. Did I mention the anti lock brake system we are working on?

Electro-mechanically deployed landing light / battery box combination. Yea I know it sounds crazy. But, the support for the battery box has to be real strong and basically box shaped. So, why not put the landing light directly under the battery? Back in the aft of the fuselage -on the bottom - it is out of harms way. (landing lights pull 15 + amps when you run them..... short power cables are lite power cables..... how about a high amperage power Darlington solid state switch? We got lots of "sparky" friends who are just as crazy as we are.

Designing the main flight controls to utilize push-pull cables. Most likely the same ones used in the throttle quadrants. We intend to have dual, redundant, crosslinked controls for each flight surface. (Yes, I can hear your thoughts) ..."Complex" "Heavy" "Expensive" "Why

not just use the plans?" ...In our defense, please think about what we do for a living here at Cape Kennedy.

And If I hear one more "boat" joke about my airplane! The locals neighbors are starting to call the garage "Area 51".

Well, what do you expect from a couple of engineers? read that "Mad Rocket Scientist")

second installment

Hello. I have just received the 30 back issues of the DFLyer and read every one of them. Outstanding publication. I thought I was designing / building in a vacuum. Now I see that there is a strong community out there that I may call upon for help.

I have been told by every single "expert" around here that the DFLy is not a safe aircraft to build, fly or even look at!. East central Florida is a hot bed of EAA activity. There are at least 30 experiments in construction here and 30 more finished and flying. I am the third DFLy builder in our EAA chapter (the other two are always silent - and now I know why) and have become the subject of monthly jest and pity. I am in Long EZ / Cozy / Glassair hell. People here flying behind modified Jet Ski engines... and I'm the "confused one"? Well...Go figure? That said, please allow me to introduce myself and my DFLy project (N-968F).

I am a thirty something mechanical design engineer with a degrees in aerospace structures and aerodynamics. I am one of those people that bring you the "space program". This is my third or fourth (depending on if you count Pipers as airplanes) aircraft project. Last year I restored (read that "nothing" left untouched) a 1958 C172 from a pile of scrap to a work of art. Now I use it to get parts for my current project. Six months ago I started work on a 220 mph - 1450 lbs gross wt, Lycoming 0290 powered Dfly...

Please don't file this letter in the recycle bin for "confused souls".

I have read everything that I could find on the DFLy aircraft. Bought and read every single word in the plans, past newsletters and several books on canard aircraft. I was greatly encouraged by the success of Justin Mace's Legacy and Reg Clarke's turbo charged Espresso. My design gross weight is higher (read "really higher") but I have re-designed and built the fuselage, engine mount, forward transom, crew area and lift attach structures to take the extra weight / loading / moments that I expect. What's that old saying "In for a little... is in for a lot" I estimate the final empty weight to be about 850 lbs and 1450 lbs gross loaded up. With the help of some very good books / software, I have figured the increase in canard and wing areas (based upon a 67% to 33% load distribution) to maintain the stall speed at approx 50 mph. Yes ...I feel the need for speed...I'm going for 220 mph top end.

I intend to build the fuselage to completion (mounted engine and working panel) sitting on its gear and wagging its tail, then move on to those long skinny wing things. This letter may be somewhat light, but my degree of seriousness in creating a safe and strong airframe is not. Wings are serious things and I want to get more refined on my construction technique before even thinking about doing them. If all goes well, the wings get started in December '96.

In general my fuselage is 2 inches wider than standard and will sport "low" cut gull doors, twin push-pull cable controls, full electrical system, near IFR panel, forward and rear fuel tanks, beefed up hoop style landing gear, aileron reflexer and servos, two axis electric trim, hydraulic toe brakes (mounted from the top like in cars), mech. and electrical fuel pumps, a Lycoming 0290-G-X powerplant (currently up and running with electric & magneto ignition), a Warp Drive prop and some other stuff that is too radical to even mention until I make it work

first. Oh yea, and it will be (barf) hot pink ???...(The wife's idea...) I may have to get a new wife...

If anyone out there is doing similar (read that "heavy") things to their DF's and have encountered problems, I would appreciate talking to them. Experience is simply to valuable a resource to not seek at all cost. I would be happy to share what I have learned, but so far I haven't done anything out of the ordinary (except to widen my DF by two inches and design / build up an engine mount system for the 300# Lycoming I plan to hang on the front of it. (Please remember this is all still theory until it flies)

My Lycoming 0290 G-X is sporting a (\$30) lightweight starter and a (\$30) 60 amp alternator on a common custom (home) built aluminum mount and a TIG welded 4130 custom (home) built engine mount / transom attach components. (I have a lot of capability in my circle of friends). Full engineering CAD drafting's and stress calculations are available for all parts. (Yea... I know...I should really get a life!)

Watch out DFLiers...(If) When this thing flies... Cocoa Fl. is going on the map!!!!!!

Help! If anyone out there has the data on the GU25 canard and wing form (the coordinates to plot the shape for a given chord) I could really use them. I have to lengthen the canard and wing (from the center) and wanted to make new canard and wing root templates for cutting the foam. I have a full set of already manufactured templates for the canard and wing being loaned to me (I hope Greg is still going to loan them to me) so I should save a lot of time in that regard.

P.S. - Fellow builders, until I get some of this stuff tested (the fuselage, wings and gear will be wired for real-time inflight stress indication) please consider all this stuff to be "very experimental". You are welcome to put it in your newsletter but I don't think anyone wants to here about my insanity until it actually flies. I look forward to the next newsletter.

third installment

Its those Mad Rocket Scientists again.

We made some more progress. Our little beached whale is starting to look like a Dragonfly. Every now and then we get a live Dragonfly coming into the garage and landing on the fuselage. I guess its a good luck sign?

We have fabricated and installed a bow style landing gear. (What a cool thing that is to see come out of its mold) The landing gear was laid up in about 5 hrs of continuous work and took about '4' hrs to prep and install. It had to be made two inches wider (for our wider fuselage) and 2 inches longer/higher (for our 58 inch prop. We have discovered a boat building fiberglass that has lots of airplane building promise. It is a multi layer woven cloth made from uni and mat that is cross woven and chain stitched down the length. It is laid out (-45 uni) x (+45 uni) x (very light mat) stitched together to form a cloth approx. 1/16 thick. It is available in six inch wide tape or 60 inch wide rolls and is about the same price as single layer 38" wide uni woven cloth. The multi cloth wets out very well and is easy to work with. We made our gear out of a combination of this cloth and 3" uni tape. The test sections we fabricated to verify the strength of this new cloth show that it is not as stiff in bending as an equal thickness of uni tape. Its is lighter (by volume) and we think it will make a fine inner core for the gear. We fabricated the gear per plans (5/8" to 1.25") using about 80% of the woven cloth cut into 4.5" wide strips as core material. The top and bottom of the gear (extreme most fibers) are 1/4" thick uni caps. We are comparing the rigidity of our gear with a standard gear (just so happen to have a fellow EAA member that just built one). More on this experiment when we go "digital" and run some more test. One encouraging note is that our gear is several pounds lighter and has no flex in it up to 600 lb. of dead weight. We may have actually built it too strong! If (if and only if all goes well, we will be happy to send the results and specs to you and others to evaluate or whatever.

We have installed and glassed the rear

and forward turtle decks and sealed up the fuel tanks. The fuel system is finally closed out and leak proof at 3 psig. We have glassed the top, sides and bottom of the fuselage and installed all the drag bulkheads. Our little whale is rolling about on its wheels. We took the '58 Cessna to our favorite junk pile in north Florida and got lots of stuff to make airplanes out of. (how about Cleveland wheels and brakes for less than 100 bucks total!) We find that stuff is taking a lot longer to do now that we have started closing out the fuselage and are putting in systems.

Oh yea... Now that we can get into and out of the fuselage, we discovered a very important fact. I (Andrew) didn't fit in this flying machine. This was very bad! The fix is in the works though. The diet is working very well. The enlargement in the canard gull wing doors area went well also. With the gull wing door area modified and a serious effort on my part to forgo the cookie jar, I have total confidence in the future of our plane. NOTE : My wife Kathy and the other half of this team (Richard) fit into my flying machine like hands in a custom tailored glove. (Hummmmm..... I may have to investigate this phenomenon more closely) The idea of heat warping our own plexyglass forward wind screen is not going so well. We seem to keep getting distortion in the high bend areas no matter how much heat we apply to change shape of the flat sheet. I fear that without some help, defeat is eminent. We may have to make a fiberglass female mold shape and send it off to be vacuum formed. If you know of something that might help please let us know.

The hand control systems for elevator and ailerons are installed into the side walls of the fuselage. The connecting linkage for the push-pull control cables is created and welded together and almost fit-checked/ operational. The control system was designed and fabri-

cated to be "moving parts reduced" and corrosion free. The fwd and aft cargo hatches are fabricated and fit-checked. The instrument panel header is installed and the fasteners are imbedded into it. The actual panel will be .125 thick aluminum and shaped to reflect the greatest concern that we have. ME..... getting into and out of the aircraft. All else has been minimized to allow me to be my lovable maximized.

I have been in touch with Patrick at Viking Aircraft. He informs me that there will be upgrades in the spar strength to allow the standard D-fly to go to 1300 lb gross wt. Also the GU-25 canard is likely to be replaced with another airfoil. We volunteered to be on the research team. We have incorporated most of the newer ideas that have showed up in the D-Flyer and will be using a different canard right from the beginning. We have been in touch with several aerodynamics' people around the country, and the canard of choice seems to be the "Rain Canard" that is being put on the EZ's and Cozy's. My choice was the Nasa \ Langley LS(1)-0421-MOD airfoil shape. Its close cousin, LS(1)-0417MOD was the airfoil that worked for the Q-200. We still have about two months left to make an educated decision on the aft wing (99% chance it will be the Eppler 1212-MOD that is called for in the plans), and probably another 2 after that to choose a canard airfoil (99% chance it won't be the GU-25 called for in the plans). What ever shape is chosen, the people at Prince propellers assure me they can make a prop to pull my hefty but through the air at 220 mph. "Just send money" seems to solve a lot of problems in aviation.

Speed brake: This stupid little flap has caused more argument here than the rest of the plane combined. Not on how to make it, or how to install it, or how to power it, ...but... where to put it! With our aux. fuel tank and CG concerns we had to do some re-thinking (so what else is

new). We figure that the speed brake should be deployed under the center of gravity. Currently, if deployed from under the seat, the speed brake could have a pitch down effect on the fuselage. Not necessarily bad thing for landing. However, on touch and go takeoffs, a quick retraction of the speed brake could induce a nose up attitude (possibly into stall ? ?) We don't know? So we will install it under the center of gravity. That is, under the canard. Just in front of the hoop gear. Got to have an aero faring down there anyway? Hey, this is experimental aviation! Note : our drive mechanism for the speed brake is a one piece electric screw drive unit @ 75 lbs thrust @ 4 inches of travel @ 4 sec @ 2 amp draw @ automatic cut-off on both ends @ about \$100. Including the hinge, our speed brake will have (2) moving parts.

Well this week end is the trial fit of the engine to the firewall. We'll let you know how it went.

DragonFly N-968F
 Andrew Aurigema
 Richard Knochelmann
 7180 Venus Ave
 Cocoa, Fl. 32927
 (407) 633-7425

**PRICE INCREASE
 FOR 1997 !**

Sorry Gang! Its time to raise the subscription rates. We've made it through several changes, a postage increase in the United States and an Interantional rate change. A needed new computer, a laser printer and now an increase in the half tones and actual printing charges.

The new rates for 1997 are as follows:

Inside the United States is = \$21.00
 In Canada, Alaska and Mexico = \$23.00
 Oversea (Airmail) = \$30.00
 Oversea (Surface) 30 day del. = \$27.00

Thanks, Spud Spornitz

"Multicom" continued
from page 3

● Moving to the soon Airport!

I performed the weight and balance on my D-fly N69CE this weekend. I weighted it using true Aircraft scales. People have always said use these versus bathroom scales because they are more accurate at the heavy weights. However, the a/c scales are measured in 10 lb increments, and not very sensitive. I weighed the a/c three times rotating the three scales clockwise around the three wheels. I used the average. And in measuring the tail wheel a bathroom scale probably would be better. I used the a/c scales and they are almost useless in the 10-20 lb range. (Later I'll reweight the tail wheel) This tells me only that my Dfly is within the CG range for first flight. Min and Max Gross cg will still have to be determined in flight test.

Tare weight = 661 lbs
Left Main = 320 lbs
Right Main = 321 lbs
Tail Wheel = 20 lbs

Station locations: Main Wheels 52 inches
 Tail Wheel 224 inches

Tare cg = 57.204
First Flight cg = 61.206
Typical Flight cg = 63.20
Max Gross cg = 63.75
(2-200 lb Pilot & Pass.)

Current status is I have to do some more work on the cowling. It doesn't fit well with the spinner. Interesting observation is that when individual parts (spinner, cowling, forward t-deck, etc) are put on the fuselage and checked, they all fit, BUT, when they are all put on at one time, they don't.

Hope to move it to the airport, between Christmas and New Years.

Carl Ericsson in Atlanta
 N69CE

● Ground Hazards at the Pumps!

Dear Spud,

Thought I'd pass this along in the hope that other DFers might avoid a similar, unhappy incident:

Weekend before, I was refueling N107MB after a lovely afternoon pleasure flight, and as usual Bob O'Connell's excellent workmanship on this Dragonfly was attracting attention. One (particularly large) man, a passenger in the C210 next in line for the pumps, was walking around the DF while I fueled, admiring and asking questions. I did point out to him the exposed elevator trim tabs while we spoke, and he successfully negotiated an inspection of the cockpit, and moved aft.

I failed however, to notice or warn him of the grounding cable: he snagged it, tripped, and recovering, stepped square onto the tail, just forward of the tailwheel assembly. Needless to say, the "stinger" was just not designed to take, oh say 280 lbs of point loading at that location. It cracked, failed, and broke cleanly at the last wrap of glasscloth. In California, this is what we refer to as "a real bummer".

By the way, I'm currently thinking of using standard 1.25" tailwheel spring steel as a replacement. Any thoughts on this? Have you heard of anyone else having to do a similar repair? I would sure appreciate your input...

And lastly, I'm expecting to receive my NSI Cockpit Controllable Prop within the next week or three. I'll document the installation and let you know how performance is effected.

Many thanks, and Best Regards,

James Bender - California

THE CLASSIFIEDS

Great Plains Aircraft Supply Quality Aircraft Parts, Excellent Service & Support at Reasonable Prices Since 1982 - We have a full line of assembled and tested VW based aircraft engines, short or long block component packages - assembled or in kit form. We have individual components, quite a few replacement parts for Hapi and Revmaster engines, props and many accessories. The 64 page catalog and technical manual still only \$4.00!! Send for yours today. Our business hours are Monday through Friday 8:00 AM to 6:00 PM and Saturdays 8:00 AM till NOON Great Plains Aircraft Supply P.O. Box 545 Boys Town, NE 68010 Phone (402) 493-6507 Fax (402)333-7750

Inboard Mark II "Hoop Style" Gear Plans - Full size hoop gear template drawings for making the mold and instructions on how to mount to the fuselage. \$16.00 (\$21.00 outside of U.S.) Mail your checks to Bill Spornitz, 1112 East Layton Drive, Olathe, Kansas 66061-2936

96 OTTAWA FLY-IN VIDEO: Over 7 1/2 hours of workshops, interviews, Fly-bys and the Awards Banquet. VHS. \$26.00 (FREE SHIPPING). DBFN INDEX: 84 pages, 8-1/2x11", spiral bound. Index of ALL DBFN newsletters to date, sorted by Subject, Author, Type and Issue #. Over 5000 entries. \$15.00 (FREE SHIPPING). Checks: Stewart Instruments.; P.O. Box 11929; Prescott, AZ 86034 MC or VISA: (520) 778-6988

Wanted: Used Cleveland or Matco wheels and brake assemblies (Chrome would be nice), Westach Instruments. Ask for Bob (407) 783-5090 Call collect (67+68)

For Sale: Dragonfly. \$4995.00 gets you airframe, wings and fin. Fiberglass finished with no filler done. Includes canopy, gear and cowling. Also includes a VW aero 1835cc with motor mount. have books on engine, newsletter and video. Photo on request. Al Hester (915) 297-1329 or (505) 390-3079. West Texas near Hobbs NM. (67 &68)

For Sale: Tri-gear Dragonfly, 75hp 2180cc Great Plains engine. 80hrs TTAE, 2 props. Cleveland brakes, Ellison carb, Terra radios,

transponder and encoder. ELT. Had ground strike when it was a taildragger. Have flown it for 70 hrs since ground strike. \$25,000.00 invested, asking \$14,400.00. Will send VHS tape or picture. Refer to issue #50 of DBFN. Dave Bastion (313) 659-7228 (67)

LETTERING BY ROBERT! - "N" NUMBERS AND MORE! High quality self-adhesive aircraft numbers. Numbers and lettering in any shape, size and color. You'll love our work - 100% satisfaction guaranteed. Pricing - 1"-.35, 2"-.55, 3"-.75, 4"-.95, 5"-\$1.15, 6"-\$1.35, 7"-\$1.65, 8"-\$1.95, 9"-\$2.35, 10"-\$2.75, 11"-\$3.15, 12"-\$3.45. Postage and handling \$3.50. Ask for Robert after 6:00 p.m. (913) 648-4022 or E-mail "apwrobert@aol.com or mail to: 6501 W. 80th Terrace, Overland Park, KS 66204-3823

Wanted: Your extra materials, looking for canopies, 5" carbon fiber (for spar caps), bi or uni cloth, blue foam, Instruments, etc. Spud (913) 764-5118

For Sale: Dragonfly Project. Almost complete. Fuselage, wing, engine, instruments, wheels, radio and canopy. Needs canard and gear legs. Continental O-470 engine or other trades considered or \$3800.00 Cash. Ask for David (941) 772-3841

Free: For the price of shipping - reusable mold for the bow style gear leg for the Dragonfly. Call Chuck (352) 347-0456

For Sale: Dragonfly Mark 1 kit w/Hapi 1835cc dual electronic ignition, many extras. Very close to completion. At least 85% More details available online at the Dragonfly web page. Call after 5:00 PM EST 207-324-6072 \$9,500.00



Subscribers Information

Dragonfly Builders & Flyers Newsletter (DBFN) is currently published Bimonthly at a rate of \$3.50 per issue/\$21.00 a year in U.S. \$3.84 per issue/\$23.00 a yr. in Canada, Alaska & Mexico. \$5.00 per issue/\$30.00 a yr. (U.S. funds) per 6 issues to foreign subscribers. Send remittance to: DBFN, 1112 Layton Drive, Olathe, Kansas 66061. **PLEASE MAKE CHECKS PAYABLE TO: BILL SPORNITZ**

Ideas and opinions expressed in DBFN are solely those of the individual submitter. This information is for educational purposes only! Application of these ideas and/or suggestions contained in DBFN are the sole responsibility of the experimental aircraft builder at their own risk, which could result in builder/pilot personal injury or death. DBFN does not imply or suggest in any way their usage.

Letters, Pictures and computer supplied data submitted to DBFN are subject to final screening by DBFN / Bill "Spud" Spornitz and may be restricted, deleted or revised. Material returned by request only.

Classified advertising; (non-commercial) for current subscribers may place an ad of 50 words or less for \$6.00 per issue, with one photo a additional \$12.00. Back issues of "DragonFlyer", "Dragonfiles" & "DBFN" are available at \$3.00 each.

The use of "VW" or Subaru by DBFN is for the sole purpose of application and description only and is not intended to infer or imply a direct connection between DBFN and Volkswagen or Subaru.

1-913-764-5118

Santa and the FAA!

It is a little-known fact that Santa has to keep his pilot's license current in order to make his deliveries every year, and so the old man wasn't too surprised when he got a letter from the FAA informing him that an examiner would be appearing shortly to run him through the usual recertification drill. A detail of elves was sent out to wash and polish the sleigh, another group was assigned to inspect, service, and repair all the tack, and a third squad started currying all the Reindeer. Santa himself got out his logbook and the rest of the paperwork and made sure that it was all in order.

On the appointed day the examiner arrived, and after the ritual cup of coffee, he went over Santa's log and the paperwork, then followed Santa outside. After a meticulous review of Santa's weight and balance calculations, the examiner watched Santa do the preflight, then followed behind him, looking closely at everything from the bells on the back of the sleigh to Rudolph's nose.

When he finished, he turned to Santa and said: "It looks pretty good so far. Let me get one thing out of my bag and then we'll take her up."

When the examiner got back, Santa was in the sleigh and ready to taxi. As the examiner climbed into the sleigh, Santa noticed that he was carrying a shotgun.

"What's THAT for?" Santa asked.

The examiner looked at him, and with a sparkly wink: "I really shouldn't tell you this, but you're going to lose an engine (*Reindeer*) on takeoff."



1112 EAST LAYTON DRIVE
OLATHE, KANSAS 66061-2936

FIRST CLASS MAIL

**Time to renew for 1997
Renewal form inside!**