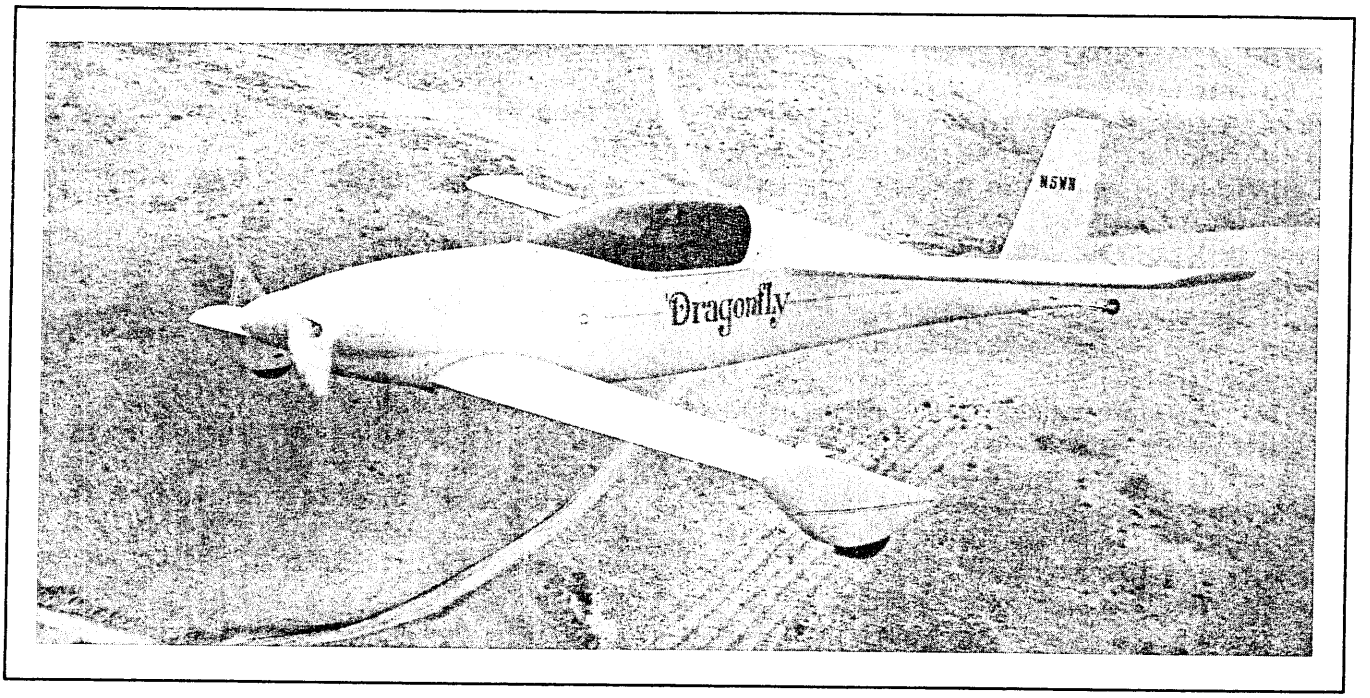
Dragonflyer



Dragonfly Newsletter No. 12 • **Fall Issue 1983**

Lots of good things have happened since the last newsletter. We'll kind of take them in the order they occured.

CAFE 400

We had mentioned in the newsletter that Dick Rutan was doing some flight testing in Dragonfly which was true but not quite the whole story. Dick had flown Dragonfly for the first time last October during the Copperstate flyin here in Eloy.

He was impressed by the performance and liked the way the Dragonfly flew. As the CAFE 400 race drew near this year the rules were changed to limit the amount of weight carried to no more than 200 lbs per seat or 400 lbs max for a 2 seater, even one like Dicks Long-Eze, which can carry a phenomenal payload in excess of the 2 persons aboard. This effectively handicapped any effort to win the 2 place catagory in the Long-Eze.

Dick started a complete study that compared performance data of various aircraft with the race profile and then called me to ask if we planned to race Dragonfly. He suggested that he and Jeanna come over and that we go through some thorough performance evaluation tests to determine just how well Dragonfly could perform and exactly what speeds, rates of climb, etc. would produce the best overall efficiency numbers.

The scoring formula at the CAFE 400 is Speed X MPG X Payload = CAFE Efficiency Number. If for instance speed were high but MPG was low the end result figure would be less than if the speed were reduced to a good economical fuel flow that produced maximum MPG and better scores. After a lot of flying and number crunching in the computer, Dick forcast that we had a good chance at winning the 2 place catagory.

Dick felt that the only real competition we had was Gary Hertzler's VareEze which won the big marbles last year. Gary continually works on and refines his bird all year for this event, even to the extent of setting up a duplicate course in Arizona to practice the race on. Gary doesn't overlook anything, even took off his generator belt for the race to gain a fractional bit of extra power.

Of course we had to compete with the Quickie aircraft Q-200 especially prepared for the race with a dynomometer tuned engine and special propeller plus, Loran for super accurate navigation.

The Q2 (you remember the worlds most efficient airplane), was sporting a hairy chested super powerful Revmaster(?) and Maloof constant speed propellor was also entered. Gene Sheehan had warned me that the Quickies "would blow our doors off" if we dared to enter the race." We were somewhat handicapped by not having anything to fly except the same tired old prototype Dragonfly that has toured the country for the past 3 years, getting used and abused almost every day here giving demo rides. Many of you have flown in the prototype.

Our special race preparations consisted of a good tuneup on the engine which had 364 hours on it at that time and we changed the oil. We removed the heavy weight plush upholstery and installed simple pads for the race. Our "racing propellor" was the same Props, Inc. 52 X 42 I installed at Sun N' Fun and have been flying ever since. We washed and waxed the aircraft and considered it race ready.

This year the race officals had a new super accurate set of specially made scales for pre-race weighins, after which the aircraft were impounded in a carefully guarded security area to assure that the weights didn't change overnight.

Race morning dawned clear and beautiful, pilots and crews were weighed in and escorted by race security to the aircraft then carefully watched to make sure that race results could not be tampered with.

Dick and I took off at about 9:20 AM and were into "Dick's lean", running at maximum fuel efficency even before the wheels stopped rolling. Dick did a super job of getting maximum performance out of Dragonfly. About a half an hour into the race Dick had cause to be very worried about Jeanna who threw a prop blade on the LongEze during the race and crash landed on a freeway. We flew over the accident scene shortly after it happened and Dick had a very anxious half hour before we were notified by radio that Jeanna and co-pilot were okay.

Throughout the whole race Dragonfly performed faultlessly and the engine ran beautifully, even though being operated always on the lean side of lean. I had told Dick at race start that the engine could stand abuse so run it to win!

We landed shortly before noon and the aircraft was again inpounded and weighed as was the crew. The difference in aircraft weight was the amount of fuel we burned and race rules would allow no more than a normal predicted sweat loss decrease in weight for the crew. Weighin completed, we went back to our motels to clean up, rest, and spend a seemingly endless afternoon waiting for the race results.

Race results were announounced at the banquet that evening (June 25) and some real surprises were in store for all. Winner of the two place experimental catagory was Gary Hertzler's VariEze which we had anticipated. Firmly in second place was Dragonfly, with a score higher than any other homebuilt regardless of horse power except the Vari-Eze. The Q-200 finished in 5th place and the Q2 (the worlds most efficient airplane) finished in 8th.

Among the special awards presented was the Tom Jewett Memorial award for the maximum miles per gallon achieved by any aircraft raced. Dick Rutan had the honor of receiving this award, presented by Quickie president Gene Sheehan, for having attained 45.08 MPG in Dragonfly. Someone commented that the award should have been called the "Cruel Irony of Fate Award."

Of course winning is always more fun than losing but what do the race results really prove? To answer that question it's necessary to understand the race itself. The course is laid out over about 390 miles of Northern Californias mountains and valleys.

Each aircraft is loaded very heavily and flys at the best speed consistent with minimum fuel burn to produce the best CAFE number. The race course has been laid out to make you continually climb and decend over the course, a diabolical plan conceived to make you go slow and burn fuel.

At race start with a maximum payload of 400 pounds, for a two seater not including fuel, the aircraft must climb 4500 feet in the first 26 miles then decend to 500 feet in the next 70 miles, then climb to 8200 feet, decend to 5400, climb to 7100, decend to 1500, then decend to the final check point. The results from this kind of race are a true measure of an aircrafts overall efficiency, because they closely parallell the conditions that a normal cross country flight might be composed of.

If built to plans your Dragonfly should produce the same kind of performance the prototype has demonstrated.

There has been some serious doubt that the results of the Cafe 250 of 2 years ago were really valid. The scales used then were rather primative, and security after the weigh in was virtually non-existant. Knowing the pertinent data on the various aircraft, such as wing area, loading, flat plate area, horsepower and etc. very accurate predictions can be made by any sharp computer oriented person showing exactly how the airplanes will finish assuming each pilot flies a perfect race. This year the two place experimentals finished in almost exactly the order the computer predicted they would. I predict the "worlds most efficient airplane" will not ever repeat its phenominal performance of the Cafe 250.

Dayton Air Fair

Terry and Joan Nichols Dragonfly was selected to recieve the Wright Brothers Memorial award at Dayton, Ohio. This award is presented to the builders of the best examples of the 10 homebuilts selected by E.A.A. Chapters as the most popular homebuilt designs. In a field of 80 to select from, Dragonfly was rated 5th most popular design. The presentation is just one week before Oshkosh so Terry and Joan accompanied by myself in the prototype, flew to Dayton, the first cross country by more than one Dragonlfy. The trip was a real pleasure with relatively good weather except for some rain and storms around Tucumari, New Mexico causing us to divert for the night to Fort Sumner, New Mexico. We found it to be a great little town, with good people, and good food. We would recommend it as an over night stop.

The only real anxious moment on the way to Oshkosh was at Deming, New Mexico. We had stopped there shortly after noon to refuel Terry and Joans Dragonfly had everything but the kitchen sink aboard, and weighed 1160 at takeoff, compound this with a field elevation of 4750 and outside air temp of 107 degrees you get 8200 feet density altitude.

Terry took off, got at the upper extreme of ground effect and sat there long enough to see a lot of desert a little too close. Joan said she could read the labels on the beer cans in the sage brush. After gaining speed though, they climbed on up to 11,500 and we continued our trip, making a mental note to watch that density altitude next time.

We arrived at Oshkosh after a stop in Rockford, ILL to visit with Dragonfly builders late thursday afternoon before the big show.

Oshkosh

By Sunday we had five Dragonflys setting on the line,the others belonging to Bob Violet of Delphos,Ohio, Courtney Bryan of Dayton, Ohio and Mark Mazzon of Sunbury, Ohio. Mark had really worked to make Oshkosh, flying his first flight only 2 weeks before Oshkosh and then putting in the hours to get it out of restriction in only 1 week!

Courtney Bryan had to leave but his spot was soon taken by Bob Verriest of Detroit, Michigan. Bob and Ching Walters were also there to visit with the gang. Bob was very proud of the aircraft on display. Each one was a Dragonfly to be proud of.

We had so many people comment on the smooth surfaces and good finishes, they found it hard to believe that these aircraft were not molded pre-fabs.

The "Designers" choice award went to Bob Violets Dragonfly. Designer Walters felt that Bob had closely followed the plans and his aircraft was the closest to the aircraft Walters had envisioned the plans built aircraft to be. Each aircraft there incorporated some of the builders own inventiveness and several good ideas were seen.

Terry and Joan Nichols, and Mark Mazzon and his wife spent many many hours on the line answering questions about their

aircraft and were a tremendous help to Viking and HAPI, we greatly appreciate it!

Pre-fab Dragonflys

TASK Research had some of the prefabricated Dragonfly parts on display in the outdoor workshop area and some of their people there to answer questions. They have incorporated some real time and labor saving inovations in the parts. All the parts overlap each other and are molded with tooling hole points so that you simply drill the 1/8 tooling holes, cleco clamp the parts together, just like a metal aircraft, check alignment and start bonding it together. The outside surface of the fuselage has the proper depth depression molded in at each seam line so that joining tapes are below the finished surface. After all joining is completed you squeejee an epoxy microballon mixture over the tapes and sand to even with the surrounding surface, just like finishing the seams on dry wall in a home.

The prefab kit comes with everything premolded, including interior bulkheads, consoles, tank, wheel fairings, wing tips, wing fillets, everything that is not a flight surface. TASK also offer pre-cut foam cores for the flight surfaces. You buy directly from them and can purchase the whole thing in one package or buy it piecemeal if your budget works better that way.

TASK tooling is capable of producing two airccraft a day and there are quite a few with deposits on pre-fabs now, so get in touch with them early if you want it soon. They already have all molds in production and parts furnished, ready to be released when the necessary "How to Assemble" paper work is done.

TASK has been building the Vari-Eze and Long-Eze parts for years, is now producing Burts Solitaire as well as Dragonfly. They're the best in the pre-fab business. TASK's new facility here at Eloy airport should be ready for them to start moving their prefab operation here in mid September. After that, Dragonlfy pre-fab will be built next door to Viking Aircraft so that will make a visit here much more interesting and informative.

Several of the Pre-fab structures can be used on a plans built fuselage, such as the forward top deck and the canopy frame. Their price on a canopy frame is dirt cheap compared to the hassle of making and fitting one from scratch. Should you choose to use the premolded frame, just buy it first and then sculpture the mating parts to fit. Some of the other goodies such as wheel fairings, wing tips with flush mount lens for strobes and nav lights may also be well worth your interest. Contact TASK at 848 East Santa Maria Street Santa Paula, CA 93060 for more info on their products. TASK is one of our approved vendors.

Seems like everybody wants to get into the aircraft business. Some do it by blood, sweat, and tears designing, building, and testing. They then mortage the family home and go into business, hopefully to make at least a living from their efforts.

Others find short cut methods. They buy parts from the guy who did it the hard way, take molds from them, then produce parts in competition with the designer. To add insult to injury, they promote these parts by telling you guys how we rip you off with high prices, that because of their low overhead and the fact that they are "good guys," they want to save you money.One of the ways he leads you to believe his prices are so low is to compare his prices with others,just convieniently inflating the actual prices to make his look good.

I examined a cowling purchased by a Califronia builder from a Texas based "good guy". The cowling is an exact duplicate of the Fibertec cowling, which is built in tooling that Viking prototyped, developed and still owns.

The cowling is cheaper, but the workmanship is lousy, and our California builder who saved so much money now is replaceing it with a TASK built cowling.

We have the junk merchants to contend with along with the plans bootleggers. Some of these bootleggers really have gall, they even call up and expect builders support!

Changes In Viking Policy

We are making several changes in basic policy at Viking that will not affect the legitimate builder but will help to curb some of the activities of those who must cheat.

In the future builders calling for builder support must have on file a completed plans licensing agreement. Those of you who have not sent yours back in will not be eligable for builders support after October 15, 1983 unless you do sign and return the agreement.

As of September 1, 1983 builders support will be extended to the original plans holder only and it is not transferable. Builders purchasing a used set of plans or a partially finished project will be required to complete a plans licensing agreement and pay a $50.00 fee to be eligable for builders support.

Builders will be required to be current newsletter subscribers to be eligable for builders support. Since the newsletter is the official method of notification of plans changes, corrections or safety notes, it is felt absolutely, necessary that the builder be informed by this method.

Each builder when calling for builders support will be asked to answer a question or two about him already on file as a means of identifying him as a legitimate plans holder.

We are sorry that these steps are necessary. They inconvenience us as much as the legitimate builder but these thieves must be stopped.

Engine Prices

HAPI Engines has held the line on prices for almost 2 years without a price increase. In that time, ball tappet screws, Total Seal Piston rings and several other little goodies have been added to the engines, Which have added to the cost of building the engine but have been absorbed by HAPI.

We expect a large increase in prices on basic parts this winter which will certainly have to be reflected in an increase in engine prices.

If you are ready for your engine, order soon while prices are at the current level and save some bucks. Contact HAPI by phone or mail for engine details.

Vent Location

The cockpit ventilation syustem in Dragonfly has never been adequate for the high temperatures encountered here in the desert. Courtney Bryan, 8875 Dog Leg Road,Dayton, Ohio 45414 has placed the vents farther forward and routed the incoming air through vents in his instrument panel. He gets more air on the ground than I get in the air. He is making some drawings and selling a little kit of parts to duplicate his system. We heartily recommened it, especially in hot climates.

Dragonfly Swarming

Things are shaping up very well for the Dragonfly Swarming at Eloy October 7,8,&9, 1983. We expect to have a very good turnout and weather if its typical should be superb then.

This get together is planned primarily as an educational weekend so come prepared to go to school. If you have a small tape recorder and camera, they will be very useful to refresh your memory on the subject covered.

We will have C.G.Aero here doing a "hands on" demonstration of wing and canard construction. There will be a forum on construction of the plans-built fuselage structure. TASK Research will have a demonstration on assembling the pre-fab fuselage. HAPI Engines will have an engine and systems forum to fill you in on those inportant areas.

The prototype will be used for demo flights, and as much familiarization as time permits us to squeeze in.

There will be a food vendor on the field with hamburgers, hot dogs, soft drinks, etc. The Saturday evening meal will be provided by Viking to Dragonfly plans holders and their spouse at no cost, with a menial charge for others if they would like to join in.

Saturday night entertainment will consist of the film "Fighting Fools" a hair raising account of the first all composite pursuit squadron (Confederate Air Force) contributions to winning world war II. Were they there?

There are still plenty of motel accommodations available within two miles of the airport but we do need to know exactly how many people to expect, particulary how many we are to feed, so everyone can get plenty.

We have enclosed a reservation sheet in this newsletter. Please fill out and return it as soon as possible. We need to have a fair count of those planning to attend by October 1 at the latest. So please fill out the questionnaire and return it promptly if you plan to attend.

Plans Questionnaire

On the reverse side of the swarming reservation is another questonnaire designed to help us help you in building your Dragonfly. Please fill out the form and feel free to add more comment on any detail that we may have overlooked that you feel would help you or would have helped you. Your imput will be carefully noted and help us to determine areas of the plans that can be improved on next printing coming up soon.

Such small things as reference notes on a page, telling you that other information regarding this section is found in chapter X page X should prove very useful to the builder and save him alot of time. Please help us to help all the builders by completing and mailing in the form soon.

New Canard for the Prototype

As per usual there are rumors flying hot and heavy about the new canard for the prototype and also as per usual 99% of them are pure fantasy.

Chris Gentry of C.G.Aero who custom builds some very nice flight surfaces, is building a new canard for the prototype Dragonfly. The original canard has much less anhedral angle in it than the plans built canards so the prop clearance has always been minimal. Bob realized that this would be a problem and the plans show more anhedral than the prototype has. That is why prototypes are built, to prove out a design and almost always, they show the areas where inprovements can and should be made.

The reasons for the new canard are -

A. To make the prototype conform to the plans.

B. Gain the plans specified amount of prop clearance.

C. Check out the installation of the TASK wheel fairings, all completely pre-fabbed including hard points for the axles.

D. To install our own hydralic brakes. E. Perhaps most important of all to me at least, to eliminate the necessity of answering this question a few hundred times at each flyin, "why doesn't the prototype have as much ground clearance as the rest of them".

The original canard that Bob built is not broken as reported, in fact it is still on the airplane and will be flying here at the swarming for you to see.

The original canard is slated to have the wheel fairings cut off and replaced with wing tips similar to those on the wing. All the paint and finish will be removed so a set of inboard wheel fairings can be installed with an 8 foot gear tread. This canard will then be installed on a brand new prefab fuselage giving us two prototypes and a version of the narrow gear to test.

If, after these test are complete, the narrow gear looks good, plans will be available from Viking to all Dragonfly builders. At that time the builder will then have an option as to wheel location. If you are now working on your canard, go ahead with the plans, but don't install the wheel fairings.

Modification drawings if and when available will not alter the canard structure, only the wheel placement. Please don't ask for advance drawings on this gear arrangement. We will release absolutely nothing until testing has proven this modification airworthy and not detrimental to the handling or safety of the aircraft.

I just wish that some of the "experts" who are dreaming up modifications and advocating changes would also build and test fly their ideas thoroughly before leading you guys to believe they have the best invention since sliced bread.

I am continually absolutly amazed at the "improvments" going around and at the willingness of supposedly intelligent people to latch onto and believe them. Most of these are insignificant and laughable but some are downright dangerous and may hurt or kill someone.

An independent newsletter published in the northeast is probably the worst offender. It is suggested in this newsletter that Dragonfly is difficult to slow down on landing, needs some form of drag brake and of course someone has conviently come up with an answer to this problem. What we have are people who have never flown in a Dragonfly, deciding without any basis in factual experience whatsoever, to solve what they imagine to be a problem then publishing the solution to be copied by others.

What we have is a situation where the well meaning but unknowing are leading the unsuspecting into dangerous assumptions that will produce very dangerous, possibly uncontrollable aircraft if their ideas for plans changes are followed.

A recently proposed speed brake invented to "solve" the "landing problem" involves the installation of a brake board on each side of the tail cone, based on the erroneous assumptions of the "designer" of this fix. I am told that 5 Dragonflys are being built with this modification.

When I talked with the editor of this publication he said that the modification was designed by a talented engineer, but admitted the "engineer" had not ever flown or flown in a Dragonfly, in fact has no factual hands on experience with canards and that the mod had never been built or tested by anyone.

It is very interesting to note that of the Dragonflys finished and flying, by far the most successful have been those who followed the plans very closely and changed nothing of an areodynamic nature. Three builders have made major changes and all three have suffered major damage.

On the other side of the coin we have Bob Violet, who followed the plans almost to the letter, and even though only a student pilot with just 10 hours dual, was able to solo his Dragonfly and fly it through restriction, gaining his private ticket in the process without any mishapes at all.

What did Bob have going for him? He followed the plans, built a good light airplane, and got himself a well qualified instructor to check him out. He simply did things the way we try to get all the builders to do.

First Flight In your Dragonfly

Some of you may remember the article I wrote in Sport Aviation last fall after flying Dragonfly to Arizona from Oshkosh, breaking a prop and almost breaking the airplane in the process. I at that time had over 4000 hours flight time accumulated in some 52 different aircraft from an ultralight Hovey "Delta Bird" through Pitts S1 and S2 and up to heavy crop dusters. I am checked out in just about all of the garden variety light planes with well over half of total time in taildraggers. I have both sailplane and rotorcraft time also.

I have never had an accident, but have had a couple of close calls. I don't pretend to be a super pilot but am probably better qualified than most pilots by previous experience and do average over 300 hours a year so am well current.

If you'll read that article carefully you will find that based on my experience and high opinion of my own flying abilities I considered Dragonfly just another airplane and didn't think I had anything to learn from it. Boy was I wrong!

I just reread the article on first flights in Dragonfly I wrote in the "Special Newsletter" last August .

If you want to keep your Dragonfly in one piece and your ego intact, read it, believe it, and don't let anybody who has never flown a conventional landing geared equal span canard tell you how to do it. Don't let them lead you into believing that anyone without previous experience or at least a darn good breifing is qualified to fly those critical first few flights.

No thinking person in his right mind would just go out and get into say an old Luscomb and expect to solo it without any coaching if he had never flown a taildragger.

Why then, would you expect to be able to jump into a Dragonfly, which will also be outside the realm of your previous experience and then expect things to go right?

You guys must realize that there are only 3 aircraft in the world that are configured like the Dragonfly. There is Dragonfly, Quickie and the Q2.

If you or the person who is instructing you doesn't have experience in one of these aircraft, the value of his instruciton is virtually nonexistant and chances are very good that you are going to break something.

Because it is super clean, Dragonfly must be landed much like a sailplane and because of its landing gear in relation to elevator placement, it has unique landing characteristics that must be learned.

You can learn one of two ways. You can learn by the experience of breaking things, or you can take advantage of the offer to get checked out in the prototype FREE!

There are also several competant Dragonfly pilots around the country now who have the initial learning curve behind them who are welling to help with their first hand experience. Some are flight instructors and widely enough scattered around the country to be available to most of you.

I've heard the lament that "I can't afford an airline ticket to come to Eloy to check out". Ask yourself if you can afford a broken canard, broken prop, and a complete teardown on the engine to inspect for damage.

Many of you do buy hull insurance. Why not get the best possible hull insurance, the free wxperience of someone who's qualified to pass on his experience and knowledge of Dragonfly.

Make no mistake about this, Dragonfly is different to land, but is as totally manageable and docile as any other aircraft if it is flown correctly. You don't even have to be a super pilot or have a lot of flight experience, all you need is good qualified instruction from a Dragonfly qualified instructor.

I talked yesterday with a builder, 5000 + hours and qualified in military jet fighters, he didn't need any instruction, he could fly anything. He reminded me of me before Dragonfly humbled me and I set about cautiously and carefully to learn to fly this aircraft and this configuration properly. I would bet with his attitude our ex-fighter jock is in for a humbling experience also.

The control inputs necessary in some landing situations in Dragonfly are just backwards from what we have learned and have programed into our instinctive reflexs. Should you get into a bad bounce situation and try to get out like you always did before in a conventional aircraft, you've already lost it because the recovery technique is all wrong for Dragonfly.

Please guys, listen to reason, get some help from an experienced Dragonfly pilot and you'll be rewarded with trouble free first flights.

Perdido Skiff

What has Bob Walters been doing? Well among other things he has been finishing the plans for the boat mentioned previously. This is really an excerise in composite construction that Bob felt would give the airplane builder a chance to work with composite materials. Building this boat involves the use of foams, glass cloth and resins, in exactly the same manner it is used in aircraft construction. The total cost of building the boat ia about $320. When you are finished you will have developed a skill and knowledge of glass and foam construction. You then start your Dragonlfy, and when you get tired of it or just plain lazy, you've got a boat, so go fishing!

Boat book sells for $20.00 and includes complete plans, material lists and everything to build the boat but more importantly, it is a basic manual on the "How To" of glass and foam construction, written in a clear and understandable manner, that can be used in constructing boats, aircraft or whatever else you might dream up out of glass. You may order the boat book from Viking at R.R. 1 Box 1000V Eloy, AZ 85231.

The Perdido is a 12.5 foot long skiff designed for very easy rowing. It is a very seaworthy small craft and is suitable for use in rough water. A small outboard can be fitted. The Perdido weighs approximately 48 pounds finished, so it can be car topped easily. Pictures in next newsletter. This newsletter is so full we need the picture space for text.

Substandard Material Warning

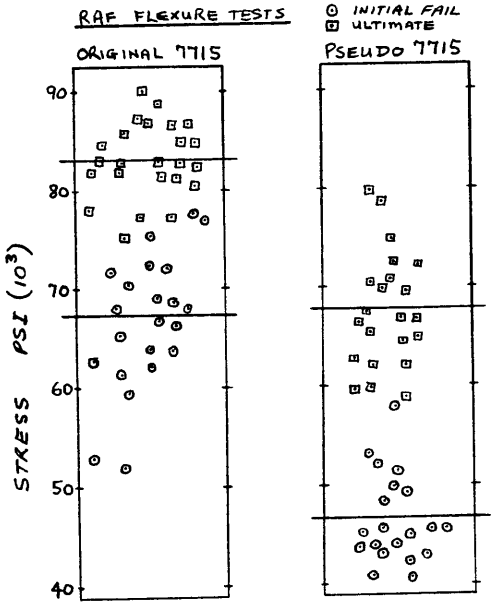
There has been a controversy over unidirectional cloth used in several composite designs recently. The proper and plans specified material is product code 7715 manufactured by Hexcell.

Burlington has manufactured similar cloth, choosing to call it 7715 also, which is a Rutan Aircraft part number, BUT it is NOT acceptable to Viking Aircraft as a substitute for Hexcell 7715. The following appeared in the last issue of Rutan Aircrafts Canard Pusher newsletter concerning this problem....

Caution - Pseudo Fiberglass Cloth

"It has recently come to our attention that a cheaper "version" of our UND #7715 cloth is available from a different major weaver. We obtained a sample of this glass and admit that our first impression was favorable. By just looking at it, it was virtually identical to the original #7715. We cut equal size pieces and weighed them on a gram scale. Weight was identical. We did a few sample layups to check wet out and the ability to layup around a tight radius. Again essentially the same performance. We felt we had something we could recommend.

We then decided to do a simple flexure test of this new cloth comparing it directly with our original UND. The test consisted of 24 coupons of each type. We failed all of them and plotted the results. We faired a line through the 24 points to obtain an average. The result was startling. The new cloth was 19% weaker at ultimate load and 31% weaker at initial failure. See the graph below.



GLASS TYPE	AVERAGE ULTIMATE STRESS - PSI	AVERAGE INITIAL FAILURE - PSI
ORIG. #7715	83181 = 100%	67429 = 100%
PSEUDO #7715	67755 = 81%	46962 = 69%

Note: The really confusing aspect of this is the fact that the weaver of this cheaper material saw fit to call it by the same part number #7715.

This means that if you were to use this material to build your VariEze or Long-EZ, even though you may have excellent workmanship with optimum resin to glass ratios, you would still have an airplane that could suffer a structural failure at only 81% of the expected load capability. Worse than that, the initial failure point (first noise) would occur at only 69% of the normal expected load. This is not acceptable since it would be impossible to detect initial failure occuring in flight. It could sneak up on you. Do not take this lightly. If you have purchased UND glass from any source other than Wicks Aircraft and Aircraft Spruce, you almost certainly have the wrong glass. Spruce and Wicks have been the only source of the correct UND, due to proprietary rights. If you have built any major structural parts (wings, winglets, centersection or canard) from this glass, you should discard them." End of quote, printed by permission from Canard Pusher.

The following is reprinted by permission from E.A.A. Chapter 724 Merrit Island, Florida newsletter.

"Last month, this newsletter published a warning that a unidirectional (UNI) fiberglass cloth manufactured by Burlington Industries and distributed by Alpha Plastics was not as strong as the Hexcel UNI available from Aircraft Spruce and Wicks. The Hexcel UNI is called out for several Rutan designs, and test by RAF indicated that the Burlington UNI had about 80% of the strength of the approved Hexcel UNI. Particularly troublesome was that the Burlington UNI had the same number assigned to it as the approved Hexcel UNI, and they looked, felt, laid up, and wet out the same.

Not long after our newsletter was published, Chapter President John Murphy got a telephone call from Alpha Plastics in Texas asking if the Chapter had done any independent comparison of the cloths. Of course, the Chapter had not. The next day John got a telephone call from a Burlington Vice President asking basically the same question. Because a Central Florida builder had constructed a near-flawless Long EZ canard from the non-approved Burlington UNI, John thought that an impartial comparison might be made between the "Burlington" canard and one of several local canards constructed from the approved Hexcel UNI.

A test fixture was constructed which would mount a canard inverted by the same attach points which hold it to the airplane. The inverted position allowed simulation of positive G forces in a bending test. A device was also constructed to be clamped on a canard to allow torsion to be imparted onto it for a twist test. Sunday, June 5, was set as the day of the test. John, many Chapter members, and two Burlington representatives from New York were on hand for the tests.

First, the "standard" canard was loaded down with 200 lbs. at butt line (BL) 50 (50" from the canard centerline) and 100 lbs. at BL 33.5, for a total moment of 13,350 inch-lbs. induced. Deflection at the canard tip, BL 71, was 3.1", and deflection at BL 23 was .420". Then the non-standard "Burlington" canard was installed into the test device. 200 lbs. were loaded at BL 50 and 100 lbs. at BL 32, for a total of 13,200 inch-lbs. induced. Deflection at the tip was 4.0" (29% more) and deflection at BL 23 was .480" (14% more).

Next, the torsion device was clamped to the standard canard at BL 50 and loaded with 28 lbs. 24" out from the canard. Twist was measured as .9". The "Burlington" canard was then set up the same way, and twist was measured as 1.2" (33% more). Later, a second "standard" canard was mounted on the jig, and bending and twist on it were very close to the values obtained on the first "standard" canard.

In short, the canard constructed with the standard Hexcel UNI proved in the test to be more rigid in both bending and torsion than the canard constructed from the non-approved Burlington UNI. The lesson to be learned is to use the materials on your airplane recommended by the designer, whether they be fiberglass, aluminum, steel, glue, or wood."

The vendor of this material has had some testing performed also and does not agree with the other tests, claiming the big guys are getting rich and trying to put him out of business by claiming his material is bad when it isn't. Let's get through the bull and get a few facts.

1. The material we are most concerned about is the early "Burlington 7715" which has been on the market for about 8 months time and is already built into who knows how many aircraft.
2. The "new" Burlington 7715 with different surface treatment and specifications which was apparently created to rectify the problems of the first 7715 has not been tested or approved by any of the airframe designers to my knowledge.
3. Through all of this turmoil Burlington has been very quiet, and has not published any data to support the vendors claims that their 7715 is equal in properties to the approved Hexcell material.
4. The vendor of this cloth has however, offered to refund money or replace the material with genuine Hexcell 7715. Why would they do that if the material was up to par?
5. The vendor has cried foul stating that Rutan and Viking are just trying to squeeze him out of business by badmouthing his products. If that were true, why don't we raise doubts about all the other cloths, resins and various supplies that he also sells?
6. Viking does not sell glass cloth, our only interest is in insuring that your aircraft is built from the proper materials so that you aircraft is not substandard in strength.

Mandatory Plans Change!

To add to this confusion Bob Walters labeled all the reinforceing materials Section A Page 1 of your plans as "Burlington style numbers". At the time Dragonfly was designed and built, Hexcell was the only manufacturer of a style #7715 unidirectional fabric in the United States and was the sole source of this special material woven to Burt Rutans's specifications.

Approximately two years later when the Burlington material was created to the vendors specifications according to him, someone choose to call it "7715" in an apparent attempt to capitalize on Bobs error and thus confuse you by saying that thier product is the plans specified material.

All the materials except the #7715 in the prototype Dragonfly are Burlington materials and style numbers, and there is no problem with any of them. Change your plans to read Hexcell style #7715, Burlington style #7500, #3733, and #1522. Do not substitute Burlington 7715 for Hexcell 7715. The only sources for Hexcell 7715 are Wicks Aircraft and Aircraft Spruce.

Custom Stick Grips

While in New Zealand this spring I found a manufacturer of aircraft hardware that builds some very nice control stick grips.

HAPI is now stocking these items, they are molded and contoured to fit either the right or left hand perfectly. I have the right hand grip in the prototype with the "push to talk" switch and it is much more confortable than the old ski pole grip originally installed.

These grips come in 3 different styles, with or without the push to talk switch options.

New HAPI Catalog

HAPI's new catalog has these and many more new goodies, it is a totally new catalog. Send $4.00 ($3.00 of that is refunded on your first $25.00 order) to HAPI R.R. 1 Box 1000V Eloy, AZ 85231 and get yours.

Hangar Sale

We are going to clean out our storage hangar and sell off several years accumulation of stuff we have saved because its "too good" to throw away. This stuff will be sold "as is" no refunds, no warranties of any kind, for whatever it will bring at the "Copperstate' flyin" October 14-16, here at Eloy Airport.

Dragonfly Movie

We have just completed a 20 minute super "8" sound movie designed to introduce people to Dragonfly. It shows plenty of flight shots, the vendors shops, and pre-fab construction. It is even free to E.A.A.Chapters for use at club meetings. If your chapter would like to use it have your club secretary contact Lou Gonterman at Viking to schedule a date for borrowing the film. You'll enjoy it!!

We're running short of pictures in the newsletter, particularly pictures of your projects. How about sending some in? We do have some more flight reports to include in the next newsletter. Two foreign Dragonflys are now airborne, one in Canada and one in Germany. Len Dyson is about ready to fly in Australia and I'm told that a French builder is also about finished. Keep us posted on your progress!

Custom Built Wings/Canards

Chris Gentry of C.G.Aero, P.O. Box 783 Anza, CA 92306 has built a new canard for the prototype that will be installed soon. Chris is building wings and canards for several people, and has developed tooling to do them right in a reasonable amount of time. If you're looking for custom building on your flight surfaces, contact Chris for details. He does nice work at reasonable prices.

In The Past Year

We purchased Viking Aircraft from Bob & Ching just over a year ago. This past year has been a busy one, and one that has brought about major changes in Dragonfly.

We have introduced the free pilot familiarization training and demonstration rides for potential builders. On the nuts and bolts side we have introduced hydralic brakes, new style motor mounts, custom calibrated flight instruments, custom made engine instruments, and custom ready to install upholstery kits.

After over 8 months of entensive work and co-operation between Viking and TASK, the prefabbed Dragonflys are now being delivered and they are beautiful! We've also attended several flyins, and spoken at many E.A.A. and Dragonfly meetings.

We've had a very busy and I think productive past year. We have solved some problems and intend to continue to work to give you the best builders support possible in time to come.

Thank you for working with us so well in the past year. We do appreciate it.

Rex Taylor