DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICAL VOICE OF DRAGONFLYERS ALL OVER THE WORLD

VOLUME 67 SEPTEMBER - OCTOBER 1996

"1996 BEST OVERALL DRAGONFLY"

SIXTH ANNUAL DRAGONFLY - QUICKIE FLY-IN

BRAD AND BETH HALE OF BUENA PARK, CALIFORNIA

Hi Spud,

We were very lucky to be able to attend the Ottawa fly-in this year. Spud, Beth and I enjoyed it to the fullest! It was great to see you, since we did not get to Oskosh. Thanks for all the hard work you, Jimmy Masal and others put in--YOU DID GOOD!

We didn't take the most direct route to the event, as you know. We first went to the beautiful Canadian Rockies. We flew our Dragonfly into Calgary and cleared customs. This was so easy-they cleared us over the phone! We toured Jasper, Lake

1996 DRAGONFLY - QUICKIE FLY-IN STATISTICS

BY JIMMY MASAL

OWNER	ST	TYPE	N#	ENG/HP	E.WT.	CRUZ	TT	YEAR
CROUCH	IA	Q-1	N14TC	ONAN20	340	105	206	'94
PECK	KS	Q-1	N21PR	ONAN22	294	85	85+	?
WELSH	IL	Q-1	N494K	ONAN20	307	105	172	'89
HUDAK	MT	Q-2	N12QJ	REV 65	550	140	150	'85
MARTIN	NC	TQ200	N479E	0-200	718	?	300	?
SPURLING	OH	HQ200	N29JM	HIRTH110	532	180+	75	'94
MALECHEK	TX	Q200	N870BM	0-200	659	180	800+	'87
FISHER	IL	Q200	N17PF	0-200	727	180	700	'90
HILDBRND	MO	Q200	N93PL	0-200	704	180	140	'93
JEWETT	KY	Q200	N2AM	0-200	682	180	600	'89
CLARKE	CAN	MK2DF	C-FRNC	SUBARU	800	175	585	'91
LARIBEE	IL	MK2DF	N88SL	LIMB70	671	150	360	'88
WIEBE	IL	MK2DF	N561W	HAPI52	702	145	360	'92
BOURQUE	LA	MK2DF	N100HK	REV 65	747	?	?	?
HALE	CA	MK2DF	N931BE	REV 65	685	130	420	'94
ARTHUR	TX	MK2DF	N29KK	CONT100	825	162	1208	'87
PERKINS	MI	MK1DF	N192AP	HAPI60	635	145	655	'85
ULVESTAD	SD	MK1DF	N69DF	HAPI60	648	130	613	'87
DIXON	KS	MK1DF	N447BD	HAPI75	742	UNK	0.5	'93

(Notes: E WT= empty weight, CRUZ=usual cruise speed, TT=total time as of show, ENG/HP=engine type and horse power, REV=Revmaster, LIMB=Limbach)

Louis, Banff, etc. The weather was perfect. We met a very nice Q-235 builder/owner, Kimbull McAndrew, he was a great help at Calgary. Airplaners are so helpful everywhere you go. Sure helps makes it easy.

Since we planned to go to Ottawa from Calgary, Minot ND seemed "on the way". So we stopped and spent a little time with my sister and family, hadn't seen them for 7 years. Then on to the Fly-in. We enjoyed meeting the new DF'ers and the Q'ers too, along with the ones we had met before. Beth is getting pretty good with those questions everyone seems to ask about the Bird. (Lets me go to the Forums-plus she is much better at it!). Can't say enough about the fly-in. Hope to come next year!

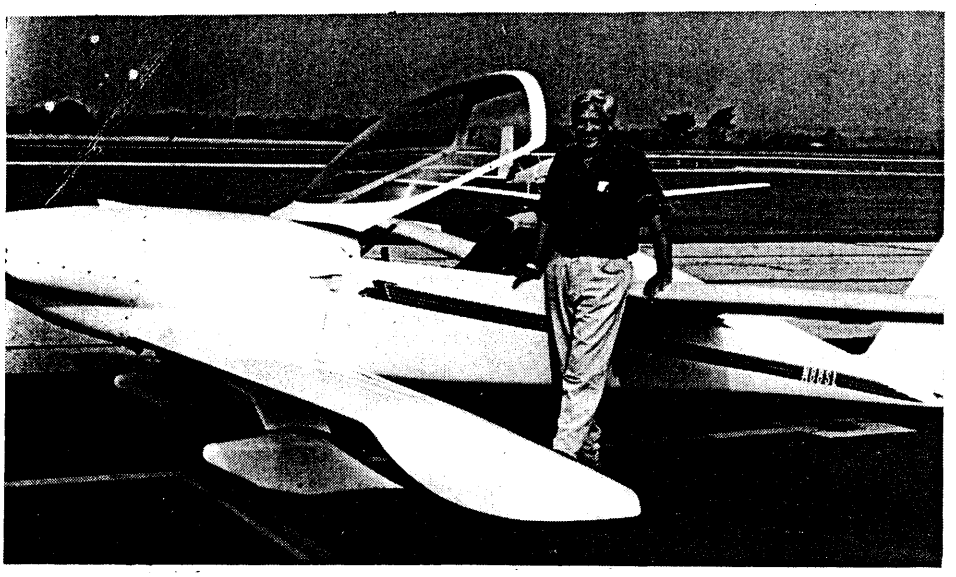
From Ottawa we were to go direct to Chino (So. California). We had to go a little north due to some weather so we came through Durango CO, then on home on Labor Day. We traveled about 4000 Miles! The Hobbs meter was about 38 hours (included some short flights in Calgary). How is that for a couple weeks of Play!

That's it for now.

Best Regards,

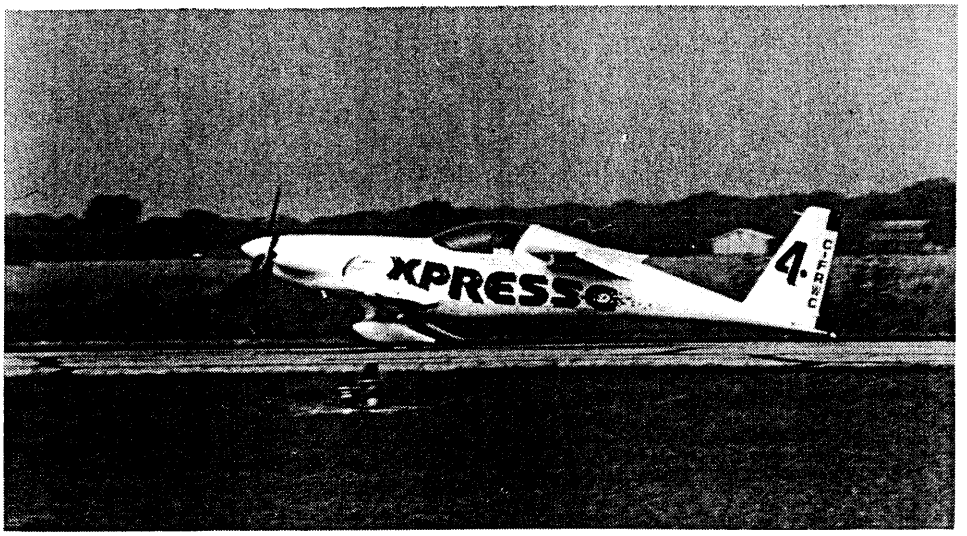
Brad & Beth Hale

Buena Park CA



Astronaut Trainer - Steve Laribee of Illinois

Wayne Ulvestad's of South Dakotas Mark I



Reg Clarke and his fast and quiet Subaru Dragonfly

1996 TANDEM WING FLY-IN!

Wow! This was our sixth annual Fly-in at Ottawa and it just seems to get better every year! Let me touch on some of the highlights of this years event.....

First off I would like to thank the weather Gods for their semi-cooperation, we had sunshine and moderate temperatures, no thunder bumpers, but very hazy at times all weekend. We had just over 120 builders and wives attend this year and just under 100 for the awards banquet, but more on that later.

We had 19 tandem wing aircraft land at Ottawa this year, nine of which were Dragonfly's. And one must say we had an excellent mix, I Subaru, one Limbach, four HAPI's, two Revmasters and one Continental O-200.

A couple of interesting notes on the Q-2/Q-200 side were: One Q-200 that was powered by a 110 hp Hirth engine with a dis-engageable transmission or clutch for the prop. I didn't get a chance to check it out, but this thing is fast in the air and incredibly QUIET! Also Les Hildebrand had his "split apart" Q-200. It was quite a eye catcher. The rear cone splits just behind the rear wing for access to control linkages and etc. Very Handy!

Patrick and Robin Taylor were there supporting the troops. Patrick is working on increasing the gross weight capabilities of the Dragonfly. He's only doing this because of the new empty weights that new builders are imposing on the Dragonfly airframe with the new water cooled engines that are entering the market place. These modifications to the shear web, and carbon fiber lay-up schedule will be posted in the news-

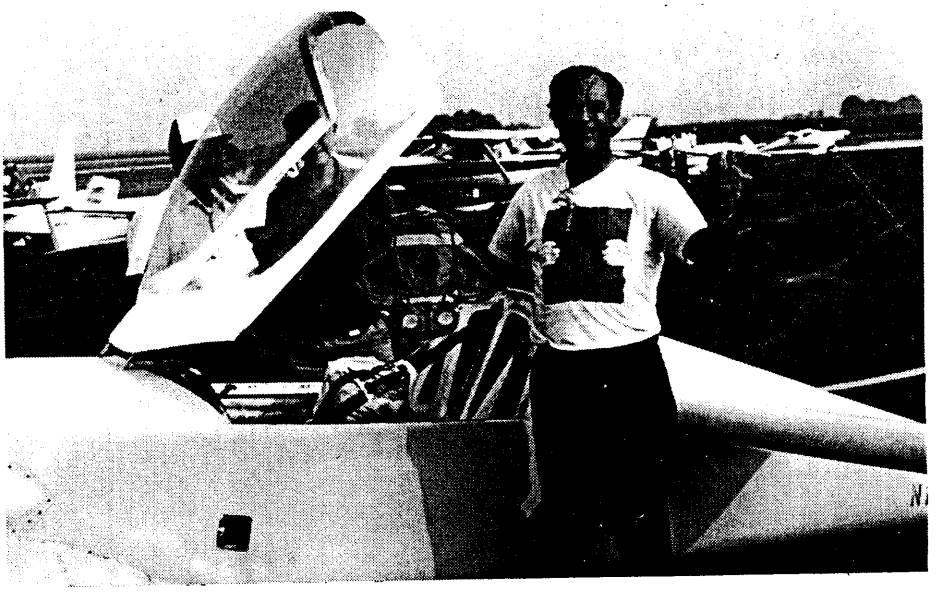
letter when they become finalized.

The one Dragonfly that sticks in my mind and should be given one of the bigger **"Attaboys"** should go to Gene Arthur and his trustee Continental powered Dragonfly. Now it wasn't the prettiest nor was it the fastest, but it was "What a Dragonfly was meant to be", you see Gene's Dragonfly has 1208 flying hours on it! This is the highest time DF that I know of anywhere. Gene finished the plane in 1987 and this guy is flying the pants off it! **Attaboy Gene, my hats off to you!**

Another Dragonfly that always brings out a smile on my face (everybody's!) is Allen Perkins in his canary yellow DF. He always wins the pilot and DF with the most **"Charisma"**. Allen has got some time on his bird also at 655 hours. Keep coming back Allen!

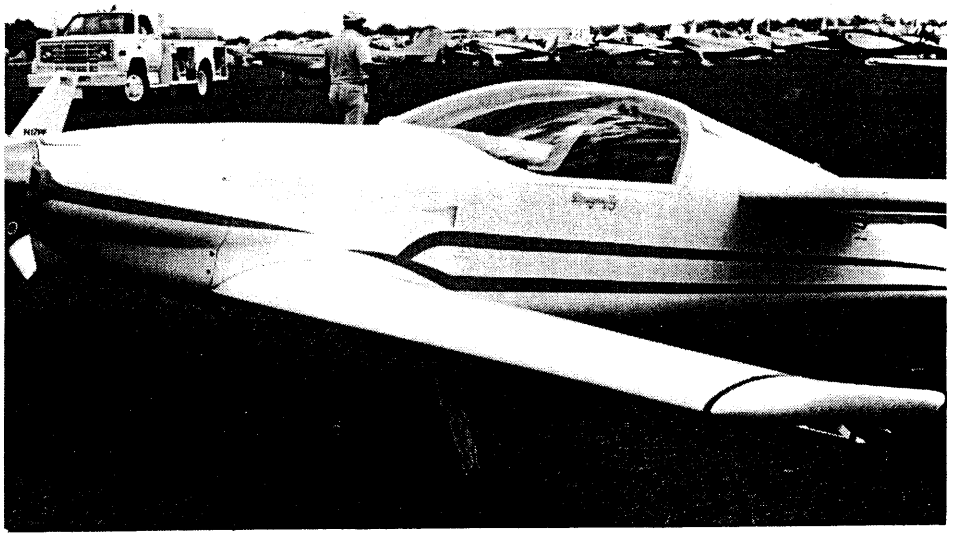
David Bourque from Louisiana supplied us with this years excitement in his Mark II. He landed long and hot. He couldn't get it shut down in time, floated (No Cleveland's, HAPI brakes). Ran off the end of the runway and folded over one of his Mark II gear legs. He was giving one of the new builders "to be" and new DBFN subscriber their first familiarization ride *(Oh Tears!)*. He was still smiling as they walked back, but we'll see! David is a go-getter. Boy, he pulled his DF into the hangar and proceeded to pull that canard off, turned it belly-up and readied it for surgery. A special thanks goes to Bruce Dixon who supplied quite a few of the tools and the materials for David to fix his bird. David had her fixed and flew home on Monday. Tough little bird!

Reg Clarke was there with his direct drive turbo'd Subaru DF for a return visit. Reg gave a very informative forum on his Subaru installation. Reg and his DF always draws a crowd. He plans on being back next year.

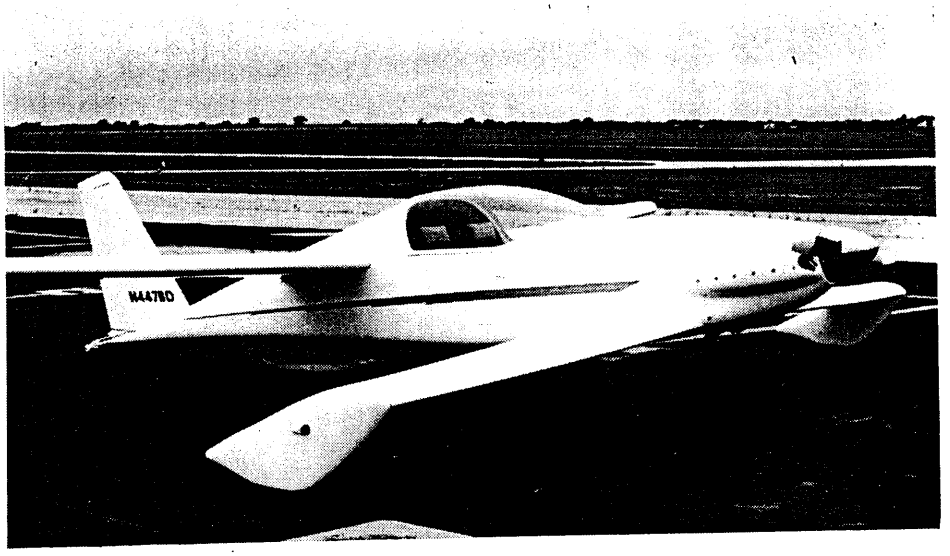


Mr. "Will Fly for Food" himself - Allen Perkins, MI

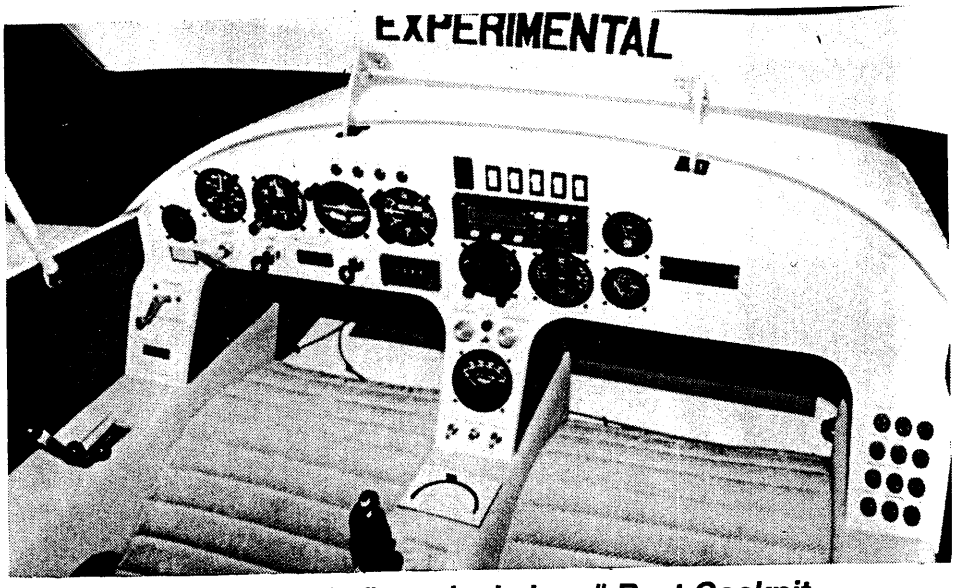
Gene Arthur of Texas - 1208 hours!



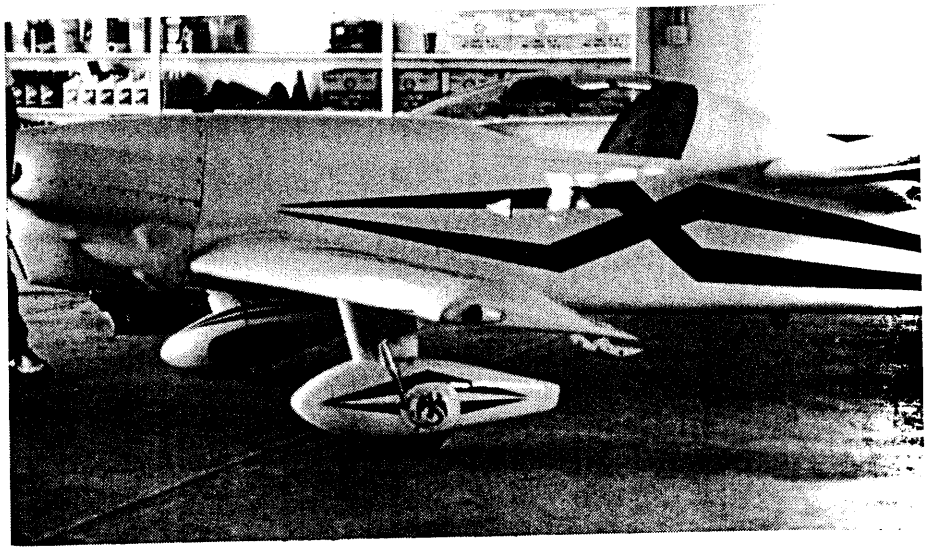
Fred Weibe trustee "IFR" Dragonfly



Bruce Dixon's beautiful Mark I of Kansas



Bruce Dixon's "surgical clean" Best Cockpit



David Bourque's Dragonfly of Louisiana

Then there's the faithful three musketeers, Wayne Ulvestad of South Dakota, Fred Weibe and Steve Laribee of Illinois. These faithful attendees are always here and are our best spokesmen for the Dragonfly and the event. Their DF's are some of the best examples on how a DF should be built and flown! There's more on "Lucky" Steve Laribee on page 9.

Bruce Dixon was there continuing to set the **"new quality standards"** on how good a Dragonfly can really be built and look.

On the front cover of this issue is Brad and Beth Hale. They have a excellent example of a Dragonfly. And they are flying the pants of theirs. If one would calculate the time Brad has put on his Dragonfly since the first flight. He'll be blazing by quite a few people in the next year or so!

● The Awards Banquet

We moved the awards banquet to the country club this year. The atmosphere, the food and the cash bar was exactly what we were looking for after a long day at the airport! Lot's of laughter and lots of good company. It just doesn't get any better!

The awards went down like this:

Long Distance Award went to Brad and Beth Hale of California and runner-up went to Reg Clarke of Alberta, Canada.

The High-Timer Award went to Gene Arthur of Texas with 1208 hours! And runner going to Allen Perkins of Michigan with 655 hours.

Best Cockpit Award went to Bruce Dixon of Kansas and runner-up to Brad Hale of California.

● Best Overall Dragonfly:

Best overall went to Brad Hale of California with runner up going to Bruce Dixon of Kansas. You folks that haven't had the opportunity to see both of these airplanes are missing a treat! The four judges started adding the points and on both airplanes it went off the scale! It was so close in points, the winning factor was that Brad's had more flight time on it than Bruce's. I would like to go on record though that when Bruce Dixon gets his hours flown off and the first time he takes it to Oshkosh, he will (the plane that is) be one of the top contenders for grand champion in the scratch built category!

Patrick and Robin Taylor of Viking Aircraft supplied the trophy for the Best Overall Dragonfly, thanks Patrick and Robin.

I have just lightly touch on just some of the things that went on at this years event. We'll be discussing more areas in the next couple of issues.

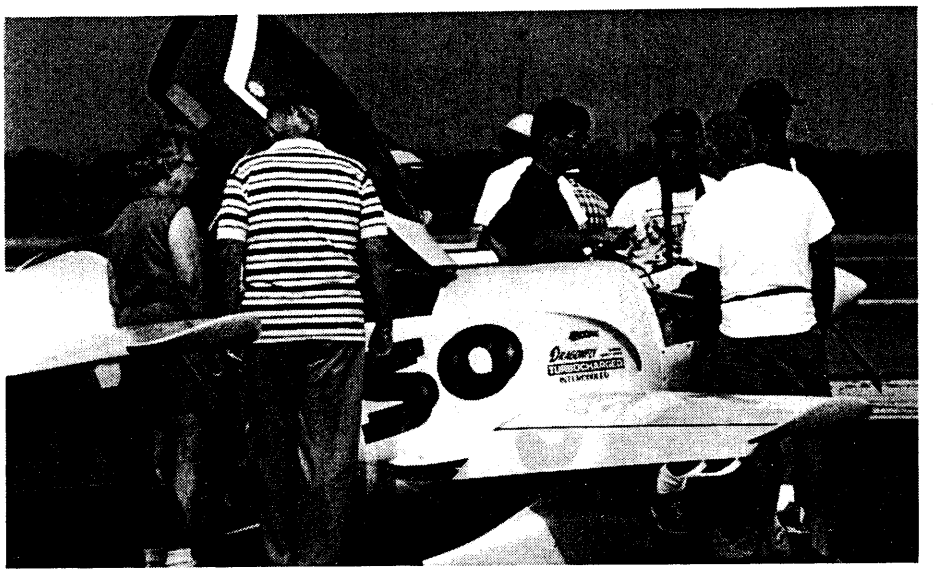
Don't forget the next best thing to being there with us is to purchase Don Stewart's video of the entire event. 7+ hours!!!

There was some talk at Oshkosh and the fly-in this year on the possibility of moving the event to another location. Everyone really likes Ottawa for a location and wants to keep the event there. So Ottawa, Kansas it will stay! The issue that came up was ***when to have it.*** Here's everyone's homework assignment.....Do we move the event to the 3rd or 4th weekend of September (this is when it origanally was) or continue to have the event on Labor Day weekend. I would like to hear from everyone some time during the next six months, but I would particularly like to hear from the people who **have not** attended the fly-in in years past.

Very Best Regards,

Spud Spornitz

"The Right Stuff" crew brings in Bourque's DF



Reg Clarke & his Suby always had a crowd around.

Les Hildebrand "split" Q-200

DRAGONFLY PITCH STABILITY AND CENTER OF GRAVITY

By Nate Rambo

Center of gravity location effects our 'Flys much the same as it effects any aircraft. Few of our pilots really understand what it's all about and unfortunately don't care. It is important.

The fore and aft placement of CG directly determines aircraft stability and control characteristics. Pilots of experimental aircraft should understand this relationship. In this newsletter we will talk about the basics of static longitudinal (pitch) stability.

Definition: An airplane is statically longitudinally stable if, when disturbed slightly from a trimmed condition, it will initially tend to return to its trimmed condition. (1) Moving the CG forward increases stability and decreases control response. (2) Moving the CG aft decreases the stability and increases the control effectiveness. (3) For any given configuration the degree of stability is determined solely by the CG position.

It is difficult to get our aircraft too nose heavy unless we have a heavier engine than the VeeDub. If we exceed the forward most CG location by a little the worst thing that should happen is that stall speed will increase and landings must be faster to keep control authority. When slowing from trim speed the stick will get "heavy" and give the pilot a lot of feedback at low speeds. The stall "nodding" may be a little more vigorous and sharper than with the CG aft. As we move a CG forward the aircaft will usually require more trimming with IAS. The nose heavy 'Fly will also be more susceptible to canard contamination because the flap (or elevator) is depressed which will help trigger flow separation..

It is not difficult to get our 'Flys too tail heavy. This is particularly true if we have failed to do an accurate W & B, or become sloppy in managing our W & B. It is tempting to take passengers that exceed the known safe aft limit. Unlike a nose heavy aircraft, the tail heavy aircraft can really bite; it can kill you. The first warning of approaching a serious problem from aft loading is very sensitive pitch response. Under power the 'Fly will require little or no back stick pressure (and stick position) to slow to the stall. Pressures will be nil right through the stall. The stall nod may not be as crisp and sharp. A deep stall and uncontrollable descent to impact is possible but not probable. A new pilot will have more tendency to PIO the aircraft as CG moves aft so it may make sense to make first flights accordingly.

When the CG is at the aft published location it is near what is called the neutral point. If the CG is moved behind the neutral point the ship will become unstable and actually diverge in longitudinally and laterally. The pilot probably will not (in a timely manner) be able to over-ride the airplane's mind-of-its-own. It will happen at take off as it did with Rex Taylor one day when he inadvertently left a ballast bag behind the seat. If it were not for Rex's cool head and swift action to get his passenger to lean forward the prototype would have crashed.

Most people do not realize that a 'Fly that acts unstable or marginally stable under power because of aft CG will normally be stable in glide. (This phenomena is exactly reversed on pusher aircraft.) There exists a power-on neutral point and a power-off one. The reason for this involves the way that the propeller slipstream mitigates the forward wing wash effects on the aft wing. For this reason we must keep power constant if we record data to quantify pitch stability.

To the best of this writer's knowledge, no revised CG limits were published for the MKII version of the 'Fly. The canard is about a foot and a half longer than the MKI. Adding area ahead of the CG is always destabilizing. But in this case the effect is less than would be expected because the MKI had wheel fairings at the tips which in part made that surface behave like a longer one. None the less it would be wise to be particularly careful of CG location on the MKII's.

Prior to flying a new 'Fly we weigh and balance it on accurate electronic scales. (If we use bathroom scales we introduce considerable question.) In any case we take the weight data and calculate those load conditions which keep us within published limits. Our flight testing is then predicated on these numbers as we incrementally load the aircraft with ballast weights and fly it through all the conditions of weight and CG position. If we feel that we cannot safely fly at the published conditions then the limits for our ship are revised at that time. This is one of the purposes of flight tests.

Going one step further and quantifying pitch stability is simple to do. All the accepted texts on flight testing fully explain the stick-fixed (and/or stick-free) method. All that is involved is recording and plotting elevator position (or stick force) versus IAS while keeping power constant. As the CG is moved back it will be noticed that the slope of this curve gets flatter. The writer's MK I was in the aft-most permissible CG location when the curve was a flat line right up to stall. Pulling the power back at this same load condition gave a nice sloped plot in the glide.

Get professional advice concerning good safety procedures prior to flight testing and do not exceed published CG limits. Always refer to good literature such as "Flight Testing Homebuilt Aircraft" by Askue to more fully understand and explore the flying qualities of your 'Fly.

Continued on page 9

IF I HAD TO DO IT AGAIN DEPARTMENT!

Spud,

How many times have I said "If I had it to do over again"!

I just recently did my elevator mod as it says in the newsletter. What a pain, I ended up with holes in the side of the fuselage and lots of work installing bearing blocks.

If I were to do it over again I would leave the original phenolic bearing intact.

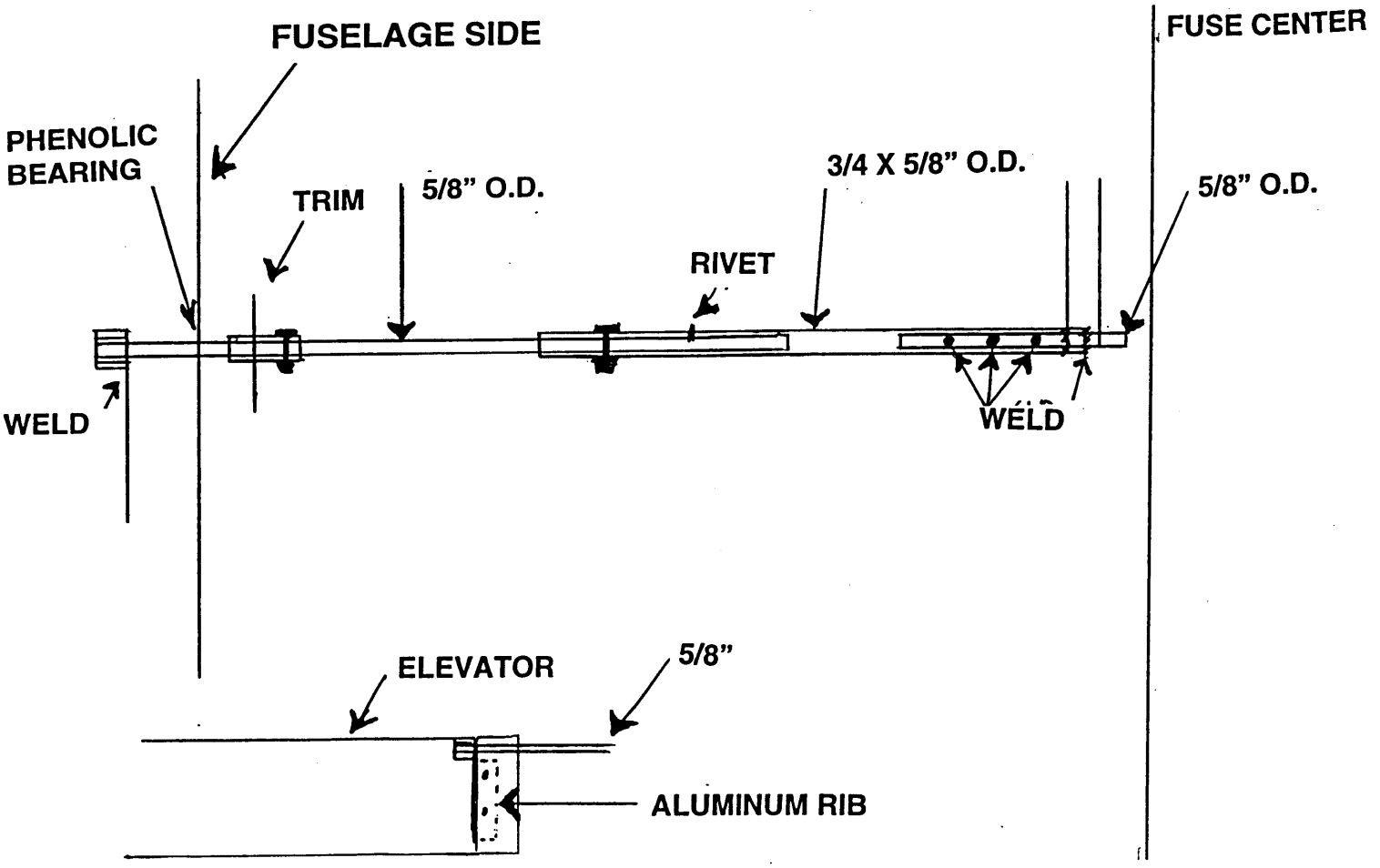
diagram. On the inboard section weld one arm to the 5/8" tubing and the other to the 3/4" tubing. Drill holes in the 3/4" tubing and spot weld the 5/8" in place. The passenger side would be the same. If you had a passenger stick you would make up a bellcrank with 3/4" tubing and use a AN-3 bolt to hold it in place.

On the original setup you will find most of the slop developing at the elevator due to the fact that it is hard to get a precise hole. To get a good

and a good rap with a hammer on the bolt would give you a very good fit.

If after assembly and disassembly it starts to develop slop you have to drill another hole. This is the last bolt to go in after all pushrods and elevator and the limits have been set. I didn't do it this way although I sure wish I would have.

One more thing. I took the cutoff inboard piece and routed out 1" of blue foam and installed a couple of layers of six ounce. I made a small rib out of .040 aluminum



With the elevators on the aircraft take a hacksaw blade and cut the inboard 2" section. Take elevators and finish the ends with nutplates and plywood as in the newsletter. Take the cutoff piece and take out the aluminum tube and spacers. The original spacer are welded to the 5/8" tubing along with the elevator attach piece. Make up the parts as in the

hole I found , if you can, put a rivet in place to hold everything tight while you drill. Start small and drill up progressively and finally use a 3/16" drill bit, not a number #12. Take the bit to the grinder and grind the flutes or edges off a couple of thousands. After using this bit your hole should be just right. A block of wood under the tubing

and installed it behind the elevator attach piece. The 2" piece slides in place and is held on with four 10-32 screws with nutplates on the aluminum rib. Works

Chris Walterson,
Geraldton, Ontario
Canada

FOR THE GALS ONLY! XXXXX

A letter to "the guys" -

If you have a "significant other" who is less than thrilled about your aircraft project and/or has no interest in attending the Ottawa Fly-In with you, please share this letter with them. (I'll know if if you didn't let her read this!)

I have attended the last three Fly-In's with my husband, Don. He invited me to join him the first time simply by asking "how would you like to go to Kansas?" I had never heard of a Q2 or Dragonfly and was not really interested in airplanes, but I love to see new places and knew he wanted to go, so I said "sure." There were 100+ people there, including 15-20 wives. I felt a little out of place because I'm not really interested in flying, but I had fun and made some new friends.

Three months later when my husband informed me that he planned to purchase a D-Fly project, my world turned upside down. You're doing what??? I always knew he had an interest in flying, but I never thought he'd actually become a pilot, let alone build an airplane. Needless to say we had some very serious discussions as I came to grips with the reality of it. I wondered how other wives felt and decided to call Susie Richardson, one of the women I had become friends with at the Fly-In. Being able to share my feelings with her, wife-to-wife, made me feel a whole lot better.

I have come to realize that we "gals" have a lot to offer one another in the way of moral support. Therefore, at the 1997 Fly-In, Susie and I are planning a special agenda for the gals. In addition to having a lot of fun, there will be a "gals-only" rap session. If you would like to help with the planning and/or would like to share your thoughts with me on why you don't attend the Fly-In's or how you feel about your husband's project, or would just like to be kept in the loop, please drop me a note. I look forward to hearing from you.

After the first of the year I would like to write a 1-page "Gal's Gazette" which I'll give the ladies some options and ask for their feedback.

Debbie Stewart P.O. Box 11929 Prescott AZ 86304 (520) 778-3747 email: NonprofitNet@juno.com

Too Cool! Ladies I can assure you and I know I speak for all the guys. We do want you to come along to the fly-in(s), but also it is very important that you have a good time also! Please give Debbie your imput. Spud

Pitch Stability

continued from page 6

It would be interesting if one of our pilots would send a plot of data at two CG conditions plus comments for Spud to publish. Results with reflexers up, down and neutral, plus stall attitude measured at the consol are desired if the ship is configured with reflexers.

Nathan Rambo BSAE/EAA

Flight Advisor

805-482-3702

DRAGONFLY BUILDERS & FLYERS NEWSLETTER

NASA TESTED DRAGONFLY!

(Well Sorta!)

HI Spud, It was a dirty job, but some one had to do it.

See Back Cover!

I had flown over to an area fly-in breakfast at Canton, Ill this summer. Well you know how I like to show off the Dragonfly and even better yet, you know how I love to give familiarization rides.

At this fly-in a gentleman came over and was really interested in the Dragonfly and its flying characteristics. When I asked him if he would like a check ride there was no hesitation on his part. The winds were in the excess of 30 mph, but the Dragonfly has no problems handling them. After a short check out, Steven put it thru its paces, including 90 degree banks. Afterwards he had two comments, it was pitch sensitive and he had never flown an airplane that could do what it does (stall characteristics and the ball staying centered without the use of rudder!).

It wasn't until after the flight did I learn that it was Steven Nagel a NASA astronaut! I felt honored to be able to have this experience.

Steven Nagel has been a NASA astronaut since August of 1979 and has flown on 4 of the shuttles, Discovery, Challenger, Atlantis and Columbia. On his third mission he was the commander on Atlantis.

Steven Nagel has logged 7,600 flying time, 5,100 in jets and 723 hours in space! And now 30 minutes in a Dragonfly

Your always on duty Dragonfly instructor,

Steve Laribee - Charleston, Ill

EMPTY WEIGHT AND THE VW POWERED SPORT AIRCRAFT!

By Steve Bennett

The following piece is biased, but I believe to be factual. With many new engine options for homebuilt aircraft now available in the market place, we have never been either blessed or cursed depending upon your point of view with more options. However, the constants never to forget are weight and horsepower.

Most of the VW powered sport aircraft available were designed with the VW engine as the power plant of choice, not of default. The engine was chosen because of its light weight, relatively inexpensive cost and reliability. If you look at the useful loads of most VW powered two place aircraft you will see that most of them can carry between 450 and 540 pounds if the aircraft is built to the design empty weight.

Most of the alternative engines are used in the KR or Dragonfly because it lends itself to that more readily than the Sonerai does. However we have seen some problems in the last year with aircraft engine installations in the Sonerai and resulting problems with the aircraft's weight and balance. Dragonfly's tend to be nose heavy any way with the a 2180cc VW engine, let alone a Subaru. Subaru installations may result in weight problems as well. I know of two KR/Subaru's, they are fine home-builts, but both have empty weights in the excess of 700 lbs. and two other Dragonfly's that have empty weight over 800+ lbs.

Now, I ask you three simple questions. First, what happens if you add 100 or 150 lbs. to the empty weight of any VW powered aircraft? Second, would you still fly the two place aircraft with two people? Third, do you feel safe flying an overweight aircraft, with two people on board, that is 150 to 200 pounds over the design gross weight? Remember "G" loading and the stress on the airframe?

As I said when I started this section, I am writing from a biased point of view. We sell VW conversions, but I believe that in the analyzing questions, their are some hard true facts to consider when building a design and choosing an engine different than the one the designer specified for it. The most successful aircraft designers choose an engine first and then design the aircraft around the engine. Not other way around.

Let me ask you a few more questions -- Have there been any popular experimental home-builts aircraft designed around an automotive water cooled engine? Or are most of the water cooled engines usually retrofitted to existing designs? When you answer the question's be sure to ask yourself why? When it comes to re-selling your aircraft, do you think that aircraft "A" having a design empty weight of 625 lbs. with a VW engine, built a little heavy and weighing in at 700 lbs. or aircraft "B" of the same design having a water cooled engine in it and an empty weight of 800+ lbs. will sell easier? What about your personal product liability for selling an overweight, overpowered, supposedly two place aircraft as a two place aircraft that can't legally carry two people, gas and baggage within the design gross weight? Those wonderful Choices! Steve Bennett - Great Plains Aircraft

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Wanted: Used Cleveland or Matco wheels and brake assemblies, 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)

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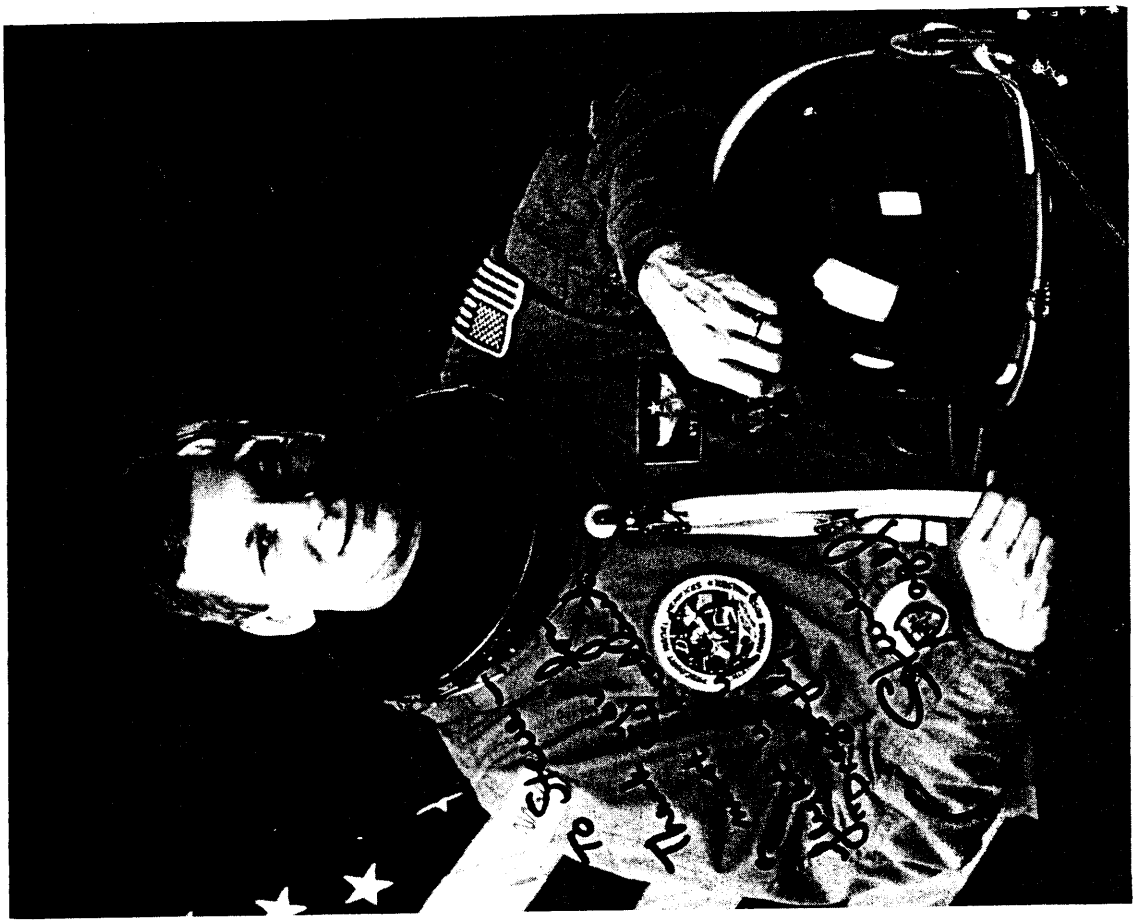

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