

The COZY NEWSLETTER #7 October 3, 1984

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It is mandatory for all COZY builders to subscribe to this newsletter, as this is the only formal system we have for communicating plans changes and/or corrections, builder hints, and other information of interest to builders and prospective builders. Issues prior to No. 4 are not necessary, in that they were only reports on the progress of plans, and extra copies are not available. Starting with issue No. 4, the newsletter contains important builder information. We will try to keep the subscription price low, so cost won't be a problem.

When writing to Co-Z with questions, please send along a stamped, self-addressed envelope. Please leave space after each question, so we can fill in the answers (without having to rewrite the question) and return on your original.

If you call, please call me at home (612-776-1145) after regular working hours (I'm working at 3M during the daytime), or on weekends. We have visitors dropping in to see the proof-of-plans model in our garage or the prototype hangared out at Anoka Co. Airport, 20 miles away. So far, we have been able to handle it.

The following prices are effective since June 1, 1984:

Information kit \$8.00

Newsletter 5.00

Plans 210.00

We have not as yet programmed our computer to print expiration dates on the mailing labels, so we hope you remember to re-subscribe when due without a reminder.

ABOUT THE PLANS

When you receive your plans, don't neglect to sign and send in your license agreement (Chapter 1, Page 4), so we can issue your serial number. Many of you haven't done this yet. Also, don't neglect to mark in the corrections published in the newsletter. In spite of our best efforts, errors do creep in, and we will publish them as soon as they are discovered.

Please check your plans when you receive them to determine there are no missing pages. We don't know of this happening, we don't want anyone to leave one whole page out of construction (The manuals were put together by the printer, and it isn't possible for us to check each one individually).

The plans were laid out in the same sequence as the Long EZ plans. You will find, however, that there are some detours. For example, you should not attempt to install the landing gear before the centerspar is installed, and it is much easier to jigbore the centerspar to the wings before the centerspar is installed in the fuselage, which means that you will have to build the wings before installing the centerspar and gear. Also, it is easier to do the turtleback and canopy before building the strakes, although not absolutely necessary.

Some of you have asked whether there will be an extra charge for Section 1A of the plans. it was planned that Section 1A would be included in the original purchase price, but that the engine installation manual would be separate, as it is with the Long EZ. We have since decided to include the engine installation instructions in Chapter 23 of Section 1A. This will make Section 1A substantially larger than originally anticipated, so we will probably ask for a small contribution toward printing and mailing costs; we will let you know when it is ready.

If you have questions, please make sure that they aren't already answered in the plans, or newsletters. Don't expect to understand everything perfectly on the first reading, particularly if you have just received your plans and haven't even started the project yet. Very often the instructions presume that you have completed preceding chapters and have developed a basic understanding of how things are done, without having to return to square 1 each time.

Thanks to those of you who have commented on the plans being very complete and well done. We have been trying as conscientiously as we can to find the best way to do each step, explain it in detail, avoid poor grammar and misspelled words, and type-set it for easy reading. It helps to know that our efforts are appreciated.

WHAT WE HAVE BEEN DOING

Our No.1 priority has been and will continue to be finishing plans. It has to take preference, of course, to any traveling I have to do in connection with my job at 3M, to Oshkosh, to answering the mail and telephone, and to entertaining those customers who drop in on us to see the Cozy under construction or the one at the airport, and to talk about airplanes. We do enjoy meeting visitors, and socializing with airplane people, but it does take time away from our primary job of finishing the plans-let's hope all of you understand.

We are pleased to report that the following chapters in Section IA have been written, all of the drawings and illustrations done, and are out for typesetting:

Chapter 15 - Firewall

Chapter 16 - Controls

Chapter 17 - Trim and Landing Brake

Chapter 18 - Canopy

Chapter 22 - Electrical

Chapter 23 - Engine installation

The following are the chapters remaining to be done:

Chapter 24 - Fairings

Chapter 25 - Finishing

Chapter 26 - Upholstery

We have given up trying to quote a completion date, because even though it doesn't look like it will be very long now, we have consistently under estimated the amount of work remaining and the time it will take. We are making good progress, however, and will keep plugging away on what remains. In the meantime, anyone running out of work to do, send us pictures showing you have Completed Section 1, and we will send you advance copies of a few more chapters.

SUPPLIERS

We have approved the following suppliers for Cozy construction materials and prefab parts;

1) Construction materials Wicks Aircraft or Aircraft Spruce 410 Pine St. Box 424 Highland, IL

62249 Fullerton, CA 92632 618-654-7447 800-824-1930

2) Metal parts Brock Mfg.

11852 Western Ave.

Stanton, CA 90680

714-898-4366

3) Canopy & windows Airplane Factory

7111 Brandtvista Ave.

Dayton, OH 45424

513-845-9872

4) Cowlings & turtlebacks Quality Aircraft Components

16223 93rd St.

Bristol, WI 53104

414-857-7419

5) Main and nose gear Task Research

848 E. Santa Maria

Santa Paula, CA 93060

805-525-4545

6) Propellors B & T Propellors or Great American

3850 Sherrod Rd. 1180 Pike Ln.#5

Mariposa,Ca 95338 Oceano,CA 93445

209-742-6743 805-481-9054

7) Exhaust system Sport Flight

3500 So. Mendenhall

Memphis, TN 38118

901-365-7606

We still have not proofed all of the special Cozy parts from Brock Mfg., but we have been assured that the necessary tooling is being made, and they will have parts in stock by the time they are needed.

We have selected suppliers who are reputable, well established with a known track record, who have a reputation in aviation for quality products, good service, and who are honest. We work with them to make sure that you receive the correct materials and are treated fairly. These suppliers have earned our confidence and respect, and you can be confident in dealing with them.

We recommend that you purchase materials only from approved suppliers. Building an airplane is too important to risk jeopardizing by using questionable materials. You are the manufacturer of your aircraft, and you are responsible for making sure it is constructed in accordance with the plans and specifications.

Any deviations from the plans and specifications (we hope there are none) should be recorded in your aircraft log book.

In our last newsletter, we commented on the excellent service we have been getting from Wicks Aircraft Supply. Jim Irwin, president of Aircraft Spruce, would like us to advise you that they have a toll-free line (800-824-1930) and offer a "Quick Ship" service. He writes:

Dear Nat, July 16,1984

Thank you for the copy of the Cozy newsletter which I received today. I note Bud's comment on fast service on builders orders and want to make you aware of our expediting service as well, called "Quick-Ship". Enclosed is a copy of the new catalog page which explains that and other features. We are happy to make immediate shipment on rush orders as well. Also, while we do not call our PVC foam Divinycel in the catalog, this is what we sell. I'd appreciate your making mention of "Quick-Ship" and our "800" line in the next newsletter (and to anyone that asks), the builders would appreciate it too, I think. See you at Oshkosh.

Regards,

Jim Irwin, Pres.

Thank you Jim! We appreciate the special effort you are making to keep our projects moving.

PUBLICITY

Perhaps the question we are asked most often is "How does the Cozy compare to the Long EZ?" We aren't really supposed to compare designs, but it is a pretty natural question to ask, since the Cozy looks like a Long EZ, except for the wider fuselage. It would be expected that the greater frontal area would contribute more drag, which would show up as reduced speed for the same horsepower, and people are interested in knowing what penalty is paid for the side-by-side feature. For example, it was predicted that the Cozy would be 17 mph slower than the Long EZ, because of the wider fuselage. We didn't want to accept this, so even though the Long EZ is a pretty clean airplane, we used every trick we knew of to squeeze out extra performance. In our flight testing, we thought we were quite successful because the numbers came out very close to the numbers in the Long EZ Owners Manual-. We even did some side-by-side comparisons with our neighbor's Long, but then these were unofficial, and we didn't know if they were representative.

So public competitions like the CAFE 400 serve a useful purpose in providing performance statistics for different aircraft under the same, supervised conditions, and should be about as unbiased as it is possible to be. So Brien Seeley writes (Sport Aviation, Sept.1984):

The "Outstanding New Design" Award went to Nat Puffer of St. Paul, MN, for his prototype Cozy, a side-by-side version of the Long-EZ with a third seat in the back. It uses a 118 hp Lycoming engine. The scores below make for a very interesting comparison:

Airplane Payload Speed Miles/Gal.

Long (Mike) 400 165 31.0

Long (Dick) 804 158.4 28.31

Ave. of above 602 161.7 29.65

Cozy 600 160.3 29.27

Although the race courses and weather were different, it would appear that Nat Puffer's Cozy pays a negligible penalty in drag for the increase in frontal area of its side-by-side seating arrangement.

We are proud that the Cozy won the Outstanding New Design Award, and had the 2nd highest total score of all experimental entries; and it was a source of personal satisfaction to know that all of the little things we did have made up most of the difference in drag between a narrow fuselage and a wide one. We want to express our deepest gratitude to two super pilots, Shirl Dickey and Al Yarmey, for demonstrating what the Cozy could really do in experienced hands.

Perhaps the most important conclusion to reach from the CAFE 400 is that the Cozy is in fact a very unique airplane.

It was the only 3-place airplane in the event. It was the only side-by-side canard configuration (the Q-

2 and Dragonfly technically are tandem wings, not canards). And the Cozy was the only canard design which had the cabin space to take advantage of the huge load-carrying capacity that Dick Rutan demonstrated with his Long EZ. The Cozy did, in fact, carry 3 adult males, 155 lbs., 175 lbs., and 190 lbs., each comfortably seated, plus enough ballast to bring the cabin payload up to 600 lbs. Although we don't recommend operating this heavily loaded, the space is available at very little sacrifice in performance, and if the Cozy is operated as a 2-place, there is greater luggage carrying capability than any other 2-place we know of.

When you stop to think about it, the Cozy really doesn't have any competition, because there is no other design which even comes close to having the same combination of features as the Cozy.

Shirl Dickey and Al and Cathi Yarmey have submitted manuscripts to Sport Aviation on their impressions of the Cozy after 23 flying hours. Jack Cox wanted to get some air-to-air shots of the Cozy at Oshkosh too, so we can expect to see more coverage of the Cozy in Sport Aviation, and maybe even a calendar picture!

Also, we took Keith Connes up several times at Oshkosh so he could write a pilot's report for Homebuilt Magazine. We understand something will appear in December.

We are unable to give rides to all of our prospective builders, but we hope events like the CAFE 400, and independent pilot reports will help to assure you that the Cozy really is everything we say it is.

OSHKOSH 84

Preparations for Oshkosh were easier this year than in prior years, because we didn't have to do anything to our airplane. The new cowling, propellor and spinner had all been installed for the CAFE 400. So it was just a matter of packing up our clothes and camping equipment. The Mouldens, our friends from Phoenix, stopped in on their way to Oshkosh on Saturday to stay with us for a few days. They left our place for Oshkosh on Wednesday morning. The weather looked so good that day that by noon I decided I was no good at work, so I called home to tell Shirley to start packing. We got off about 3 PM, just as the weather started to deteriorate. We encountered a really big build up just west of Oshkosh, which necessitated a minor detour, but otherwise the trip was uneventful. As a matter of fact, it was typical Oshkosh weather--crummy! There weren't very many show planes there yet, so we nabbed a good parking space near the main gate.

We set up camp in Paul's Woods with Cozy builders Mouldens, and Wolters, and were later joined by other Cozy builders and friends, the Wilhelmsons, Yarmeys, Cotters, Corriganes, Tomes, Petersons. Berggrens and Johnsons. Someone quite appropriately put up a huge sign "The Cozy Camp". On Tuesday morning, the Cotters passed out T-shirts to everyone in our camp, which read "We enjoy the good food and Cozy atmosphere at Shirley Puffer's". They had a special T-shirt for Shirley which read, "I am Shirley Puffer." All these T-shirts created quite a stir on the flight line, in the Fly Market and in the Forums. By evening, quite a few people were wondering if a new restaurant had opened in town. That evening in camp we were hosted to a steak fry, and afterwards, around the campfire, a sing-along. The Cotters and Corriganes passed out copies of the song they had composed, printed below, which we sung to the tune "Clementine". (We lost track of how many times we sang it during

the course of the evening).

The Cozy Forum on Monday was well attended. The progress of the program was reviewed, questions answered, and it was a good get-acquainted session. Interestingly, our 100th set of plans was sold at Oshkosh this year.

We always try to attend John Ronz's forum. John designs Burt's airfoils, is an outstanding authority on canard designs, and a very entertaining speaker. He discussed the many advantages of canard configurations, but cautioned would-be designers that optimizing all of the interdependent variables in a canard design was very difficult and should be left to the experts (like Burt).

Mike Melvill's Long was sporting a new canard and some strange little fences on the wings called "turbolators". In his forum, he explained that he had been flight testing a new Ronz canard airfoil. It was so powerful that it could lift the nose high enough to stall out the main wing. He said this really scared him because it resulted in a deep stall from which it was very difficult to recover. Mike was progressively shortening the span of the canard to reduce the maximum angle of attack of the canard, and the turbolators on the wings increased the maximum angle of attack of the wings. Canard span had been reduced to 135 inches, and he could still stall the wings at some c.g. positions, which is a dangerous situation. So it is by no means certain that this new airfoil will be approved for the Long EZ. The benefits being sought are the elimination of the trim change in rain and a few extra mph. However, these are not worth any compromise to safety or a reduction of allowable c.g. range.

N22CZ was a pretty popular exhibit all week. Although we had it roped off, many people wanted to climb in and try it out for size. We probably set an all-time record for the greatest number of people climbing into one airplane in one week.

A number of people also wanted rides. We had to restrict this to builders who were almost complete, or aviation magazine writers. Ulie Wolters was one of our builders I took up in the fly-by. Ulie is a NATO fighter instructor and tried his best to convert the fly-by pattern into high g turns, which didn't go unnoticed by the tower.

Keith Connes, who writes for Homebuilt Magazine, wanted to do a pilot report, so we took him up several times, and Jack Cox wanted to get some aerial photography of the Cozy. This turned out to be a little tough because the weather started deteriorating badly toward the end of the week, and we were very fortunate in being able to catch a small patch of sunlight the day before the photo plane had to leave.

Custom Tops, our franchised T-shirt supplier, did a land-office business and were completely sold out before the end of the week. After they ran out of shirts, people were buying shirts elsewhere and having them put the Cozy insignia on.

We were very sad when Oshkosh came to an end. We wanted to leave Saturday morning, but the field was closed with fog and haze til noon. When visibility was declared to be 3 miles, they opened the field and we left. Visibility was terrible and we had to climb to 10,000 ft. to top the haze. We just set up the R-Nav and DME and stayed at that altitude until we were over our home airport. Pity the

people who tried to fly through it!

When people ask us what effect bugs and rain have on the Cozy, we say we hope they come together so the rain washes the bugs off. Returning from Oshkosh we didn't have any rain, but we sure hit a lot of bugs. I wish now I had taken a picture just to show people that the Cozy can indeed fly in bugs.

We hope next year that we will start seeing a few other Cozys at Oshkosh, because ours is getting lonely. As soon as this happens, there will be a designer's award for the best one each year.

IVHC

The IVHC started out as the International Varieze Hospitality Club, and later grew to include Long EZs, Solitaires, Defiants, and "other Rutan types" (such as the Cozy). It is basically a builders club whose members are interested in meeting other builders, and providing hospitality (hangar space, transportation, food and lodging, etc.) to any members who happen to be traveling through. The club puts out a quarterly newsletter, reporting on what various members have been doing, either individually or in groups, and what activities (fly ins, trips, events) are being planned, and have a banquet at Oshkosh each year. We have belonged for the past 6 years and have met many wonderful people and had some great times, and always look forward to the annual banquet.

Cozy builders could either join the IVHC, or they could start their own organization. Pat Cotter has offered to organize the latter, if that is what most people would prefer to do. My *own* inclination would be to join the IVHC, because we have a lot in common with Long EZ types and should encourage a close association. Let us hear from you on this subject.

LETTERS FROM BUILDERS

We would like to continue to publish occasional letters from builders, if you don't mind. We could also publish some pictures too if you send us some black and white prints.

Dear Nat and Shirley,

Just a short note of thanks for a great airplane.

Richard Bowie

RT 1. Dudley, MO 63936

Dear Nat,

After receiving and carefully reading and studying the information kit, I have decided the Cozy is the aircraft I would like to build. Enclosed is my personal check for the plans and one year's subscription to the newsletter.

I have followed the development of the Cozv as an informed reader since the initial article in Sport Aviation and offer my congratulations to you and your wife, as well as any others involved, for work well done and wish you the best of luck in your further endeavors.

Sincerely yours,

Robert E. Lyon

803 Fairlawn Ave. #7

Laurel, MD 2U707

Dear Nat,

Okay, here's my check, now, send me my plans!

The information packet was nice, especially the pictures. They are now framed and will be hung in the work area, as an incentive, when my son and I begin construction on our Cozv.

It is obvious from the photos that you are a perfectionist and it will be difficult to match your workmanship, but, we'll sure be trying.

Nat, as a sound technician, I feel that you have missed a major selling point by not placing more emphasis on the low noise level in the Cozy cockpit. Normal sound levels in tractor type aircraft (without extensive noise treatment) are from 95 to-105 decibels. My calculations on the Cozy indicate that the SPL (sound pressure level) should be in the area of 75 to 80 db. Believe me, that is a significant difference and would result in much less strain on the ears and vocal cords.

If you are interested in finding out just how bad my math really is, Radio Shack has a reasonably accurate and inexpensive sound level meter. It would make an interesting tidbit for the newsletter.

For your enlightenment, the factors resulting in our selection were: Cost of construction, Aesthetics, Cockpit SPL, Cost of operation, and Speed and range.

We plan to begin construction early next spring and, since I am an amateur photographer, will endeavor to provide you with progress reports and photos.

As for your efforts in aircraft design, all I have to say is,

Thanks,

William E. Ray

756 Woodland Circle

Haughton, LA 71037

PLANS CHANGES

-Chap. 5, p.1. Step 1. Change 3/4 x 2 x 8ft. to 3/4 in. x 2 ft. x 8 ft.

BUILDER HINTS

Do not wear latex gloves when working with epoxies. For some hard to understand reason. wearing latex gloves will increase the likelihood of getting a severe allergic reaction to epoxy. Water soluble barrier creams, such as Ply 9, offer excellent protection, but wash up periodically and apply new cream. If you must wear gloves, wear butyl gloves over an inner cotton glove. Do not wear gloves over barrier cream.