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# COZY NEWSLETTER #54

## July, 1996

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### WHAT WE HAVE BEEN DOING

This spring there was more than the normal amount of frontal activity along the gulf coast so we planned to leave early again for Sun 'n Fun, just to make sure we got there. Actually, we left a week early, just as the next front was passing through Arizona. Although threatening, the weather wasn't too bad until we approached El Paso. There was a continuous line of thunderstorms moving northeast, with a bad one sitting just over El Paso. Flight Service advised us to turn around, but we were just able to squeeze through along the edge of the White Sands restricted area. It wasn't too bad then continuing on to Fort Stockton, as night approached. We overnighted at our favorite La Quinta motel. We got an early start in the morning, and soon ran into the up-slope cloud deck as we headed east. We flew VFR over the top to Mobile, where we stopped for fuel, and then continued on to Kissimmee FL to spend a little vacation before Sun 'n Fun started. We spent one day at the EPCOT Center, courtesy of builder Bill Walsh, and then moved our Mark IV over to Lakeland two days before the show formally started. This year we rented a display space for our Cozy (we had been on the waiting list a couple of years) right across from the FAA building. Builder Wayne Lanza very graciously provided us with a table and a couple of chairs. We weren't allowed to put up our gazebo for shade, and boy, were we burned after sitting in the sun for a week. Jack and Donna Wilhemson met us there, stayed with us, and helped to man our "booth" for the whole week. We bought our usual flat of strawberries for \$5 (the Lakeland area is the strawberry capitol of the world).

The Cozy banquet at Farmer Jones Red Barn Inn on Sunday night was well attended, the steaks were good, and everyone had a good time.

Three Mark IVs and a bunch of 3-place Cozys were there, but bad weather along the gulf coast kept a lot more away. Vance Atkinson, who never misses Sun 'n Fun, wasn't able to make it in from Dallas this year. Frank Bibbee, with his just finished Mark IV (what a beauty!) arrived later in the week from Texas. We saw a lot of old friends and were able to make a lot of new ones.

Later in the week (I forget what day) we attended the bratwurst party put on by U.S. Aviator magazine. Jim Campbell again arranged to entertain us with this wonderful Dixieland jazz band known as the "Lost Patrol". Ten of the best musicians in the state of Florida (probably in the whole world) get together just for this party, and I have never heard better music anywhere!

We saw another rip-off design, called the "Speed Queen". It was only a mock-up. The promoters had never built and flown one, not even a prototype, and yet were selling kits! They said their design was based on "proven technology" (it's a good thing some people proof their designs). They were advertising a special "show price", and people were actually putting money down!

We left on the last day. Got as far as Gainesville and had to land because of IFR weather ahead. Spent some time watching radar in the FSS, and the briefer was nice enough to advise us the best way to circumnavigate. Again it was over-the-top to Baton Rouge, where we stopped for fuel, and then an end run around a front to Fort Stockton, where we overnighted. The next day, the weather was good, except we had 35 knot headwinds all the way back to Mesa. Thank goodness for a fast airplane!

A couple of weeks after Sun'n Fun, we flew over to Chino for the fly-in sponsored by Aircraft Spruce. We stopped on the way at Apple Valley to go on a photo shoot with Norm Goyer, for Sport Pilot. We then flew in a formation of 3 (a Maul, and 150 Cessna) on to Chino, where we needed a special VFR to land. The fly-in was very well attended; a number of Cozys showed, and we got together with several builders for dinner. The flight home the next day (once we got above the muck) was uneventful; but we could see continuous smog below us all the way to Phoenix.

After fulfilling our fly-in obligations, the middle of May, the time had arrived to take out our Lycoming engine! What a sad day! We have been flying with Lycomings in 3 different Cozys for close to 1000 hours now since 1992. That's 14 years, and they had never let us down.

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## UP-DATE ON THE FRANKLIN

We have a very good group of Mark IV builders in the Phoenix area, and had many offers of help. Mark IV builder Ed Nielander, who took over Jim Allen's project, offered to help move the Franklin engine from my shop where I had it installed on an engine stand, out to the airport. That went very smoothly. We then removed the prop from the Lycoming, disconnected all the wiring, and unbolted it and the engine mount from the firewall. We then hoisted the Franklin and its mount in place and bolted it to the firewall. It fit like a glove (no comment about O.J.)! Shortly thereafter is when the fun started. We could write a book, but in summary, through our own stupidity we bent a push rod and shroud and had to pull cylinder #1 to inspect it, check out an intake valve and magnaflux a rocker arm (they were okay). Atlas supplied a new push rod, shroud and gaskets. When we had the engine back together again, it started on the first try, but oil was spraying from the bottom of the fuel pump. The fuel pump (made in the USA) was defective. Another call to Atlas and the replacement was on its way. We finally were able to start flying. We had temperature problems (very hot outside temperatures didn't help). The cylinder head

temperatures were out of balance, with a 70 deg. spread between the coolest and the hottest. Oil temperature was too high as well, so we had to limit power and flight duration while working on the temperature problems. In the meantime, the crankshaft seal started leaking, so another panic call to Atlas for a replacement seal, which arrived forthwith. Have you ever tried stretching a crankcase seal over a prop flange? Try it some time, its a lot of fun. We solved the oil temperature problem finally by going to a 13 row cooler and installing a separate scoop for the cooler (I didn't want to rob more cooling air from the cylinders). Our first step on cylinder cooling was to insulate the tuned exhaust pipes, which were generating an awful lot of heat inside the cowling. This didn't seem to help, so we got rid of them altogether, substituting short stacks exiting aft out of the bottom cowling. This required major cowlings modifications. The cylinder head temperature distribution has been more elusive. Its a tedious process of trying to deflect the air toward the hottest by installing baffles in the bottom cowling, taking a test flight each time, recording the data, then analyzing it, and then removing the cowlings again to try a different arrangement. As of this writing, I think we are getting a handle on the problem. Because its so hot, I do the test flying at 6 AM, and then spend the rest of the day getting ready for a test flight the following morning. I have made 11 test flights to date of about 1/2 hrs each. I haven't really pushed the engine yet but I can tell you that the Franklin is a very smooth running engine. It sounds very differently from the Lycoming, and it has more power than the O-360. Our final judgment will have to wait the results of more testing and flight time. I am deeply indebted to Mark IV builders Ed Nielander and Lee Merlo, who have spent many hours at the airport in this hot weather helping me put cowlings on and take them off, analyze results of flight testing, make changes, paint cowlings, etc. I am also indebted to Pat Goodman at Atlas Motors, who has responded promptly to our every call for help. And I should mention Shirley, who is putting up with me leaving for the airport at 5:30 AM and returning at 6 PM, leaving all the other chores to her. Pioneering a new engine installation from the ground up is much more difficult than simply following instructions for an installation that has already been proven and optimized, using mounts and cowlings available off the shelf, and a lot more demanding than most builders can imagine, and a decision not to be taken lightly. We hope to optimize the Franklin installation and make the information and parts available to our builders so it will be easier for any who choose to follow. We are hoping to get all of our testing and optimizing done so we can head for Arlington the second week of July.

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## **PUBLICITY**

We haven't seen any pictures in Sport Aviation or Kitplanes lately. Hope we haven't missed any. We need more of you to send in write-ups and pictures of your finished Cozys to both Kitplanes and Sport Aviation. It doesn't matter if you have just finished, or have been flying for a few years. SEND IN THOSE PICTURES!

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## **FIRST FLIGHTS**

We have first flight reports from Tim Merrill and Bruce Elkind, and heard that Randy Schoonover was ready to fly:

June 13, 1996

Dear Nat,

Thank you for all your help. So far Dennis Oelmann has been flying our Cozy Mark IV N2269H. Please find enclosed a couple of pictures. We hope to see you at Oshkosh.

Best regards,  
Tim, Debbie, Oliver & Jerry Merrill  
Ft. Atkinson IA

June 13, 1996

Dear Nat,

I don't think I've ever written but now that my plane is finished and flying beautifully I want to thank you and everyone that shared their time and gave of themselves over the last 3 1/2 years.

At the urging of my friend I took my plane to Kanab, UT after only recently flying off my 40 hrs. I entered the race, with full fuel, passenger, a green crew and straight out of the box. We flew the course at 210 mph, not bad considering most times were slower by 10 mph off other races.

We love our plane and are planning trips every weekend. A total dichotomy from working every weekend on the plane wondering if we would ever actually fly. Every weekend is an adventure now.

I wish I could say she flew great on the first flight, but we needed some adjustments. I absolutely recommend that a current and competent EZ driver does a complete check out with a new owner. We are fortunate as Cozy owners to have the luxury of side-by-side seating. Thank you,

Bruce Elkind  
Hawthorne, CA

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## ARLINGTON

We hope to make Arlington again this year because we have many builder-friends in the Pacific Northwest. It is a very popular fly-in and runs from July 9 to 13th. Last year we had an impromptu dinner with several Cozy builders, and this year our friends Eric and Victoria Westland decided to expand it to include all Cozy builders (and spouses). They write:

June 14, 1996

Dear Nat and Shirley,

It's hard to believe summer is here again and with it, the Arlington Fly-In. It will be good to see you two again. Progress on the Mark IV continues along at a steady pace with the glasswork nearly complete. It has all gone very well.

This year, we would like to host a Cozy dinner at our home on Friday, July 12th, 6 PM during the fly-in. It will be very informal - we'll just fire up the barbecue to make some burgers, have some salads, plenty of beverages and talk airplanes all night. We will do all the food preparation here, so no one need bring anything. If people want beer/wine, we ask they bring their own. A few \$ to cover the cost would be

helpful as well. All are welcome, including children of any size. Attendance at Arlington always varies with the weather, so an RSVP would help us plan for food. For those flying in that want to attend, we'll help with transportation as well (be sure to contact us ahead of time). We will have maps at the airshow for you to pass out or you can contact us for one. Our address is 10702 62nd Place West, Mukilteo WA 98275. Our phone number is 206-742-6798.

We look forward to seeing you and our other Cozy friends again. Wishing you all a safe trip!

Eric & Vicky

## OSHKOSH '96

We hope to have our airplane in a display area at the SE corner of the new North Exhibition Bldg., same as last year. We have a Cozy Builder's Forum scheduled on Friday, August 2, in Tent 3 at 1:00pm. The Pershings have made arrangements for our annual Cozy builders banquet that evening. We learned that Mark Haigh closed Robbins unexpectedly without warning, so they had to find a new place. It will be in the Concord room of the Ramada Inn along Hwy 41, a few blocks north of the airport. We have had a conflict the last few years with the Homebuilders picnic at the airport which is on Saturday, so the Cozy banquet has been moved to Friday. Hospitality hour starts at 6PM and dinner at 7PM. Dinner will be buffet style, with 2 choices of meat, potatoes, veggies, beverage and desert. Cost is \$10.50 plus gratuity and tax. There will be a guest speaker, Wm. Fox, and we also plan to honor Cozy builder/pilots who have over 500 hours on their Cozys. Please let us know if you qualify.

It will be nice (and Ben Owens will appreciate it) if all of you can also attend the EAA picnic for homebuilders the next evening.

We would be pleased to host an Internet meeting at our airplane (let's make it Saturday, at 1:00 PM), same as last year, for Internet subscribers to meet each other, and to ask questions. Others are welcome as well.

## EPOXY RESIN UPDATE

**RAE SYSTEM** - This is the original epoxy resin system used in the Varieze and Long EZ and all of the Cozys we have built. The resin is Epolite 2426 and the fast hardener is 2176 and the slow hardener is 2177. It is carried by Wicks. As of this writing, the fast hardener is on back order. This is still an approved system and the one we have used for 20 years. Our Varieze, completed in 1978 and exposed to all kinds of environmental conditions is still flying.

**SAFE-T-POXY** - This system was developed as an alternative to the RAE system, for those who developed allergies. It is brown, has an aromatic odor, and thickens in the pot instead of remaining thin until an exothermic reaction at the expiration of its pot life. It was taken off the market at Burt Rutan's urging because it contained MDA.



**E-Z POXY** - This is a slightly modified version of **SAFE-T-POXY** by Gordon Bowen, formerly of Hexcel, who started up his own company. He says he is using a new process to stabilize the MDA and reduce the chance of a builder being exposed. It is carried by Aircraft Spruce.

**EPOLITE 2427** - This system was developed by Hexcel to replace **SAFE-T-POXY**. It is practically colorless, nice low viscosity, and very nice properties. We have been using it recently and like it very much. It is more sensitive to moisture and carbon dioxide contamination than other systems, however. We have had no problems with it in our climate, but there have been several problems reported by builders in very humid climates, probably because the resin and/or hardener were left uncovered for a period of time. There was recently quite a flap on Internet by a builder claiming to have received a "bad batch" because it was cloudy. Others receiving the same batch number found theirs to be perfectly clear with no problem curing, so it is not clear what caused the one isolated complaint. Wicks has asked us to publish this letter from Fiber-Resin Corp, who took over the production of epoxy from Hexcel:

5/23/96

Dear Rosalie (Wicks),

It was a pleasure speaking with you regarding the FH2427A&B resin system. The technical laboratory personnel at Fiber-Resin Corp. in Chatsworth CA have investigated and reviewed the quality history of both the part A and the part B as well as specifically retesting our retain and stock of the FH2427B lot #CEHE066. All of the results and retesting confirm the original Q.C. test data indicating that the material is in specification. This supports your observations of your stock that the material is fine.

I would like to reconfirm that in handling all resin systems, it is very important to keep the containers tightly sealed except when dispensing material. This helps to keep exposure of the material to air, humidity and other possible contamination down to a minimum and maintain the product physical properties and storage life. The FH2427 resin system may be slightly more sensitive to air and/or humidity than other resin systems such as those that contain styrene and/or MDA. This is a trade-off for the significant safety and environmental advantages of the FH2427 resin system. One way to maximize the quality and storage life of FH2427 resin system, and for that matter any resin system is to displace the air and humidity from the container headspace each time the container is closed using some form of dry gas such as nitrogen or FH8440 "Burp", available in aerosol cans.

We periodically receive inquiries from users of FH2427 as well as users of other resin systems concerning a wet lay-up laminate not looking or curing correctly (too brittle or too soft), resin or hardener not looking right (cloudy, off color, etc.) or the resin not wetting out to fiberglass. In almost every situation the problem relates to techniques and procedures. Mix ratio of the part A and part B must be used within the stated shelf life. The fiberglass being used must also be kept free of contaminants including humidity and moisture. The application must be allowed to cure adequately to achieve the final physical properties.

If we can be of further assistance regarding any of the Epolite products, do not hesitate to contact our Customer Service Department. Thank you for your continued interest in Fiber-Resin products.

Sincerely,  
Randolph Olson  
Facility Manager

## BUILDER HINTS

1. Cozy builder Phillip Johnson, in the Pacific Northwest, protects his resin and hardener from exposure to air by putting a plastic bag over the top of his plastic containers in his dispenser after filling them, with the bag resting on top of the liquid surface and with enough slack so the bag will follow the surface down as material is used, and then putting the cover on the container.
2. Cozy builder James Cullen, in Las Vegas, requested that we remind builders that epoxies cure with a waxy surface in varying degrees, and will not form a good bond to subsequent layups unless the surface is properly prepared by sanding dull. When peel ply is used, the waxy surface is removed with the peel ply, however, it is still good practice to sand a cured epoxy surface before bonding to it, even when peel ply is used.
3. When installing nut plates, the best way we have found to set the 1/16" rivets is to squeeze them with vice grips. We prefer to use the soft rivets, because they are easier to set and have plenty of holding power.
4. You can avoid marring aluminum by lining the jaws of your vise with copper. An easy source of copper is copper pipe. I got a 6" length of 2" copper pipe, sawed it down the middle, flattened the pieces and then bent one around each jaw of the vice.
5. In a pusher engine installation, it is typical for the cylinders closest to the firewall to run the hottest. This is easy to understand. The high velocity air entering the cowl "piles up" at the aft end of the cowl, and the aft cylinders have the least pressure above them because they are closest to the prop. The solution is simple. Build a 4" high fence across the bottom of the cowl about 10" aft of the inlet. This will cause the aft cylinders to run the hottest. Then start trimming them a little before each flight until all 4 CHTs are equal (you do measure all CHTs, don't you?). The solution is more complicated with a 6 cylinder engine.

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## THE LEAST EXPENSIVE WAY TO BUILD

A good share of our builders are attracted to the Cozy Mark IV, not only because it is a darn good airplane, but because it is built from plans and is much less expensive than a prefab kit airplane. Since many of our builders are cost conscious, we might strike a responsive note by reminding everyone that the least expensive way to do any job is "right the first time". It is going to cost most builders \$30,000 to \$35,000 to complete a Cozy Mark IV with aircraft engine and avionics ready to fly. If you do a good job, your airplane could easily be worth over \$100,000. The difference is not a bad return for your investment of 2500 + hours of spare time. If you do a bad job, you would have trouble recovering just your material cost. Several newsletters back we discussed a Cozy III which sold for less than \$10,000 because it had a Ford V-6 engine. It is ironical in a way, that those few builders who are motivated to try to save money by using an auto engine are going to end up spending the most money by scrapping the auto engine when it doesn't work, and buying an aircraft engine, or by never experiencing the performance which could have been theirs, or sacrificing the huge gain which could have been theirs if they decide to sell the airplane because they aren't happy with it. Remember, the best way to do any

project is "right the first time!" One other thing to consider. The Cozy design has a very good reputation, and if you some day have to sell, it will command a much higher price if you can honestly claim that it was built according to plans.

The Aerocanard with the Infinity retractable gear that we discussed in newsletter #52 was for sale at Sun 'n Fun. We noticed in a recent edition of Trade-A-Plane that it is now being advertised as a Cozy Mark IV.

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## FOR SALE

1. Great American propeller 62 x 72 fitting an SAE2 flange with 7/16" bolts for a 150 hp Cozy. Better than new, because just refinished by Performance Propellers. Comes with Brock spinner that fits prop. \$700. Dennis Oelmann (319)232-0018.
  2. Cozy builder, Bill Walsh, has arranged a source of tee shirts (sweatshirts available on request) which come in various colors but only adult sizes. They have a detailed picture of the Cozy or Cozy Mk IV. The Cozy name is printed above. Bill is also working on other Cozy items, such as jackets, caps, pins, and cups. The shirts are available at \$9.95 plus \$1.50 shipping and handling. Orders for 2 or more are sent 2-day priority. Make checks out to Linda Walsh, PO Box 160884, Altamonte Springs FL 32716. (407)695-3543.
  3. Wayne Lanza makes a number of very nice goodies for the 3 and 4-place Cozys. He has an electric speed brake actuator kit with all the parts needed for installation, with instructions for \$275. His latest creation is a switching and breaker panel for the Mark IV. It is similar, but not identical to the one we had made for our plans model. It is located at the top of the panel, which is the best location for appearance and access to the electrical system. Wayne is using the highest quality DC switches (they are hard to locate) and circuit breakers, and pre-wires the panels, making the rest of the electrical system installation very EZ. Cost is \$425. We really appreciate Wayne's contribution, and heartily recommend his products to you. Contact him at: 9425 Honeysuckle Dr., Sebastain, FL 32976 (407)664-9239.
  4. We believe that the 4-pipe stainless steel exhaust system we designed and is being manufactured by Custom Aircraft Parts (see "Authorized Suppliers") is far superior to anything else available or advertised for the 3 and 4 place Cozy (or Long EZ, or any other pusher, for that matter). Cost is \$500, which includes shipping and handling.
  5. Rebuilt O-360 Lycoming engines at a reasonable price. Contact Dan Brown, (918) 834-0791.
  6. New, improved fuel sight gauges. Clear bubble with white background, \$35 per set. Vance Atkinson, 3604 Willomet Ct., Bedford, TX 76021-2431 (817) 354-8064.
  7. Dr. Curtis Smith's nose gear ratchet (which we recommend) is now priced at \$40. Dr. Smith's new address is 204 Woodland Dr., Edwardsville, IL 62025 (618) 656-8209.
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## LETTERS FROM BUILDERS

6/18/96

Hello Shirley and Nat!

We're getting close enough to completion of the Mark IV we better order the Owners Manual. We're working on the "Puzzle Parts" (engine, wiring, instruments, etc.) and hope to make it to Oshkosh this summer. If not, it'll be done soon after. Hope to see you soon!

Pat & Jeannine Young  
Pueblo, CO

6/18/96

Dear Nat,

The internet mail list has now grown quite large. I was number 7 a year ago and it has now passed the 200 mark. Of that number almost a hundred are actively building. Hopefully it has helped reduce the number of phone calls you get and the overall tone has mellowed significantly as Mark Zietlin and others of us try to short circuit personal attacks from getting out of hand.

My Cozy is progressing well. Chapters 4 through 12 and 14 are complete and chapters 16 and 24 are being worked on now (I'm doing the chapter 24 work myself to reduce the financial burden and I also find it challenging to do all the fitting!). Wing cores are on order from Featherlite so I should be starting on the wings next month. I'm concentrating on completing the chapters that generate the most labor for the least cost since money is limited this year but I want to keep the project moving all of the time. I'll probably leave chapter 13 until close to the end as it doesn't seem to impact the rest of the construction. I'm estimating that all structures will be complete by this time next year and then another year for finishing. I was hoping to have the plane ready for my 65th birthday (next summer) but that's not going to happen.

I hope all is well with you and Shirley. We have been thinking that we might drive to Phoenix again some time this summer to visit with you for a new hours and perhaps get our first ride in a Cozy if you're agreeable (Editor: Please do!). If you remember, we made the trip last summer but your Cozy was down at the time so we missed the flight opportunity.

Warm regards  
Michael Antares  
Penngrove, CA

6/12/96

Dear Sir,

I don't know if you are interested, but most of the information I've accumulated lately on my list of potential projects has been via the internet. I'm not really much of a computer hacker, but I've greatly enjoyed the chronology of Mark Zeitlin's Cozy project via his internet homepage as well as Sid and Mari Lloyd's progress descriptions and rousing endorsement of the Cozy. Someone also had some copies of some newsletters out there that have been very interesting and enlightening. My normal

avenue for information has always been to start with Kitplane's annual listing. I'm surprised to find myself using the computer more than the magazine as a source of information!

I don't want to take up any more of your time. Please send me the info pack to the address above. I'm eagerly awaiting its arrival!

Sincerely,  
Bruce Dunkle  
Fairbanks, AK

5/2/96

Dear Nat & Shirley,

Progress on Cozy Mk IV 415 hasn't gotten very far I'm afraid. In fact, you could say I haven't done anything since I ordered the plans. I can't wait to start, but I'm trying to get my own business started so I haven't had much spare time. I will be working out of my house, so I've been spending all of my spare time finishing off my basement to use as by office. Who knows, once the office is done and I'm working out of my house full time, the work shop will be real convenient. I think 20 hrs a week on the office and 20 hrs in the shop sounds O.K., don't you?

Thanks for a great airplane and a nice set of plans. I can't wait to get started building and flying.

Regards  
Tim Morgan  
Woodstock, CA

4/30 /96

Dear Nat and Shirley,

We arrived home from Sun 'n' Fun in 5:50 total flying time against headwinds, Our Cozy Mark IV performed flawlessly! It is such a pleasure to have a speedy and reliable airplane. Our prop is now undergoing final finish at Performance Props so we'll take a flying break now.

Terri & I want to thank you both for the momentos you presented to us at the fly-in. We were so glad to have made it given the weather early on. A highlight for me was being able to give my father his first ride in a Cozy. He loved it! Thanks again. Wishing you blue skies and tailwinds.

Frank & Terri Bibbee  
Bedford, TX

5/10/96

Dear Nat,

My Cozy is getting its "annual". Nothing very noticeable, no corrosion, no cracks, no delamination. I note however that I have performed 246 landings with the same set of tires from McCreary "Air Trac" model. They first wore on the outboard tread. At 120 landings I reversed the tires to put the worn part inboard and the good tread outboard. Angles vertical and horizontal are per plans. Pressure is per

owners manual of 60 psi. Declared gross weight and used weight is 685 Kg. FPFMP with 0-235 C2A is considered and used as a 2-place aircraft.

Best regards  
Marc Pichot  
Mimizan, France

5/6/96  
Aloha, Nat!

Since last writing, my family and I have bought a house, gotten mostly settled down, and are currently choosing a configuration of the workshop. I have not "officially" gotten started working on my Cozy Mark IV due to the fact that we are also in the process of remodeling the house. (I must take "back seat" on my airplane building to take care of the needs of the family.)

Nat, I want to thank you for your part in promoting a good, stable, and useful aircraft. I have never seen any headlines about Cozy aircraft having problems (unless it was pilot error!), and that gives the Cozy family a good name. Take care, and God bless!

Aloha and Mahalo  
Gary Lyons  
Kamuela, HI

5/4/96  
Dear Nat,

I have to comment to you. I had dedicated my attention till now to the 1st section of the plans. What a surprise when I decided today to have a look at the 2nd section. Chapters 19, 20, & 21 were not there! I ran in panic and wrote to you this (now modified) letter and to the Cozy forum in Internet. The next day a more observant builder posted a reply explaining that the missing chapters were at the end of the 1st section. I don't know if it was a mistake or if they were intentionally sorted this way. Should I do Chapters 19, 20 & 21 after Chapter 14, or do I have to follow the numerical order? (Editor: Either way or a combination is O.K.).

Anyway, I wanted to congratulate you about the plans. Despite English is not my native language, I have been able to follow the clewar and detailed steps of the first chapters.

Yours Sincerely,  
Rafael Larroche  
Zaragoza, Spain

5/8/96  
Dear Nat,

I hope this letter finds you and Shirley well. Cozy #0393 is progressing. I'm in Chapter 6. Like some point out, if you follow the directions, the parts will line up.

I was interested in a comment in the last newsletter on bending 2024 T3 aluminum for the fuel selector valve. I attempted to use a friend's sheet metal bender - radius too tight! It didn't break, but resulted in severe stress cracks. Then I used the newly generated scrap piece as a shim over the bending angle. It worked great!

The book, "Sport Plane Construction Techniques" by Tony Bingelis, has a chart of selected materials minimum bend radii. .064 2024 T3 Al minimum radius is 3 times its thickness. It makes good sense for all us builders to have this book by Tony as well as "Firewall Forward" and "The Sportplane Builder". Tony doesn't delve deeply into composites, but he covers a lot of questions.

Thanks for your continued support. I'd like to thank Southern California builders Keith Spreuer and Paul Stowitts for fielding some of this first-time builders questions. Paul has started a CA Cozy support group, supplies a roster of other builders in the area, and helped arrange the first West Coast gathering of Cozys hosted by Mike and Waldine Doering in October '95 Porterville.

Gotta go,  
Joe Heagerty  
Mira Loma, CA

5/2/96  
Dear Nat,

My purpose in asking about the airfoil was strictly aimed at making construction easier. My feeling was that if the airfoil was indeed Eppler 1230, I could duplicate it quite accurately with the equipment I have available. Even if the accuracy was not a question, it would be easier and faster for me to let the machines do the job. I should have done a little more homework before calling.

I plotted the Eppler 1230 airfoil scaled to the size of the largest template used in the Cozy. I then taped the patterns from the plans together and overlaid my plot on the plans. What I found justifies your concern about modifications. The upper surface of the airfoil is a perfect, however the lower surface is quite different. The maximum difference is about a half inch. Obviously this is a different airfoil. I had intended to do this in any case. The reason I called was to ask you about any known differences. I am not sure what route I will take now. I may digitize your drawings and use the milling machine to actually cut the templates. If so, I will make sure they match the drawings before I use them. I think I can do it this way in the same or less time and do a better job.

I used Formica for the canard templates. It worked, however I had some trouble with the material being warped. I made a trial aluminum template to see how that would work and there seems to be a minor problem with aluminum. My experience was that the wire was cooled by the aluminum, which caused a problem. I have not tried 1/16" plywood. I have some reservations about getting a smooth surface to drag the wire over. I am planning on trying aluminum with Teflon tape over the edge to serve as an insulator and also provide a very smooth surface. (Editor: What seems to work best is 1/16" plywood with a thin strip of copper tape, available from hobby stores, over the edge to provide a smooth surface.)

I asked about elevator travel problems that some people have had. You suggested I sand a hair off the lower surface of the core trailing edge. I did this and used the original jig blocks which hold the elevator in the neutral position when I installed the hinges. The results were almost perfect. I can get 14 degrees up travel and 30 deg. down without a problem. The gap is .200 with the elevator in the neutral position.

I think I could sand the bottom trailing edge of the canard and get a little more up travel if it is deemed necessary. The elevators are ready for final finishing at this time. I placed a small box on the trailing edge and added weight to check the balance. I need a total of 6 oz. at the trailing edge to balance the assembly. I cannot imagine using that much paint in the finishing operation.

For your information, landing gear struts I received from Featherlite were well done and of the proper dimensions. This includes the nose strut. I have just received the nose strut cover and wheel well. These parts are also well done. The parts I ordered from Brock were in stock and promptly shipped. Wicks has been very good about delivery, a few things backordered but they arrived in a reasonable time. All in all, this has been a good experience up to this point and I am sure it will continue to be.

I want to thank you again for your continued support of an excellent design.

John Epplin  
Orion, IL

4/5/96

Dear Nat,

I read NL #53, as I do all of the newsletters, in earnest. I was especially drawn to the Letters From Builders section, and in particular, the glide performance report from Ken & Janie Brimmer. I loved reading about his flight test and the details he included to help asses the accuracy of his numbers. As an engineer, I appreciate his effort to conduct an objective test and to control the variables as much as possible. I'd like to see more performance reports from some of the flying builders. And thank you Ken and Janie Brimmer.

One thing puzzled me, however. I was surprised to hear that he desired a wing leveler for "holding the wings steady". I recall flying your airplane about one year ago when you so graciously gave me a ride around the Mesa area. During that flight, I noticed how stable your airplane was in both pitch and roll. Except for my initial ham-fisted inputs that waved the airplane around a bit, the airplane felt like it was on a rail and the light controls were a delight. The pitch/roll harmony reminded me a lot of our Bonanza. The memory of that flight will hopefully carry me through my first flight in our Cozy. That is still in the distant future. We'll be driving to Oshkosh again this year. Hope to see you there.

Bob & Nancy Talir

Hello,

I'm a Las Vegas police officer/helicopter pilot. I have been following the homebuilt industry since Burt Rutan came out with the Varieze so many years ago. I finally got a ride last Saturday in a Long EZ built by Gus Sabo, the airport manager of the North Las Vegas Airport. WOW! What a believer it made out of me! I experienced in that airplane the sensation I knew as possible in aviation but until that moment has eluded me.

I will be throwing away my plans for the Sportsman 2x2...no more steel tube and fabric for me, I want a fiberglass slice of greased lightning!!



I haven't read anything about the Cozy since it first came out as a 3-place plane. I was excited to see you have plans for a 4-place, which I intend to build. Please send me your information pack.

The Metro Air Support unit is located in the far west end of runway 7-25 at the N. Las Vegas Airport. It is a brand new facility. If any of you own a Mark IV and are looking for a destination, please fly in to North Las Vegas, come in and say "hello" and let me gawk at your airplane....you're always welcome. We have nine pilots in the unit, and most all of us are homebuilt enthusiasts. (Jeff Glynn, if you read this, why don't you look this man up. Maybe he will give you a helicopter ride.)

Kirk Sullivan  
Las Vegas, NV

4/7/96  
Nat,

Cozy plans #473 is coming along very nicely, if not spectacularly fast. I am working my way through Chapter 7, pretty much at my goal of 4 chapters per year. As others have said more eloquently than I, however, work is not really the right word. Building the Cozy is one of the most satisfying things that I have done and I know that when it is complete I will miss the building process. Walking into the shop and looking over a part of an airplane that I built provides a tremendous sense of accomplishment.

Thanks for your work in the design of this plane and in your support of the builders.

Steve Campbell  
U of Minnesota

3/21/96  
Dear Nat,

Once again, thanks for a great set of plans (Cozy Mark IV) and your dedication to the Cozy. I have just started Chapter 9 and am really enjoying the process. I have consistently found that by sticking to the plans and the proven techniques that all my results are very satisfactory and all measurements are VERY accurate.

You will be happy to know that I have constructed N341CC per plans and have resisted the temptation to make modifications. I do plan, however, to use an electric speed brake actuator and some of the other "accepted" modifications.

I must give a BIG THANKS to Steve Wright and family for sharing their workshop over the past year. This has been a big help--I could not have made the progress that I have without their generosity.

Thanks again,  
Chris A. Mitchell  
Nashville, TN

4/6/96  
Dear Nat,

Per our conversation today I'm sending a check for \$500 for a set of Cozy Mark IV plans. Visiting with Chuck Walcott (Camarillo Airport) convinced me this is the airplane to build. Thanks to you (and Burt Rutan), there is still hope for general aviation. Sincerely,  
Martin Ranck  
Oxnard, CA

3/25/96

Hello friends!

I'm just sending along my newsletter renewal. I enjoyed the latest newsletter a lot. Keep up the good work!

Thanks,  
Cliff Cady  
Brandon, FL

3/27/96

Dear Nat,

Thanks for spending the time with me on the phone last night. Hope that you and Shirley had the nice dinner she was looking forward to. I guess a dinner is a small request by her after enduring jury duty.

I have seen builder comments all over. Additionally, I looked up every reference to the Cozy Mark IV that I could find in years of back issues of every aircraft publication I subscribe to...(many). Every reference regarding you, your company, your operations, your ethics, etc., are all nothing but positive, and in many cases, glowing commendations. As such, please find my check enclosed for a set of plans for the Mark IV.

Sincere regards,  
Todd A. Miller  
Falls Church, VA

3/26/96

Dear Nat,

I am at the stage of cutting out ailerons on my mark IV and I have found the plans to be great when compared to the plans for a popular metal "Brand-X" kit that our EAA chapter is building. Cozy plans are very easy to follow and explicit.

I found it was a struggle to bond wing jigs to the floor while preparing to bond the core pieces together so I made a simple jig out of a couple of 12' 2x6's to clamp the wing jigs upright in the correct position. It was easy to align the wing jigs and flip them to do the opposite wing.

I experimented with wetting out the six UNI layers of the wing shear web on my work table, flat, on a long piece of wax paper, in reverse order, rolled it up around a 4" tube, then I took it over and unrolled it on the wing core, trimmed it, removed the wax paper, and stippled it well. This was an easier operation than individually wetting each layer on the core. You have to be careful not to distort the layup as you

handle it.

I have used an epoxy pump and a sensitive weighing scale to measure epoxies and decided I like the scale better for ease of use and ability to switch ratios. I check the scale by weighing a 48" piece of wire and adding a 21.12" piece of wire (48 over 21.12 is a ratio of 100 over 44). The weight of both pieces should equal 1.44 times the weight of the 48" piece (rocket science!).

I have experience with another Cozy that was painted with Acrylic Enamel. This paint does not stick well and temperature fluctuations cause it to bubble and eventually flake off. I plan to use a urethane finish coat. I experimented with some Inconel wire in my hot-wire saw and found it stretches a lot more during use than regular safety wire. Back to safety wire.

Congratulations on the Seven-Oh.

Regards,  
Kent Ashton  
Harrisburg, NC

Dear Nat & Shirley,

I really appreciate the effort you put into the newsletter. Just a few lines to update my Cozy Mark IV (#0225) project. Fuselage is glassed inside and out and we are currently working on Chap 9. Doing reinforcement layups on landing gear bulkheads. The only thing that would make this project any better is if I had more time to work on it.

I would like to let you know about my Oshkosh trip last year. I had a great time, it was a year filled with firsts:

1. First year my partner Harry had ever been to Oshkosh. (He couldn't believe it.)
2. First Cozy forum I ever attended.
3. First time I ever sat in a Cozy. (Thank you Nat & Shirley.)
4. First Cozy banquet. (Great food, great people, great speaker.)
5. First visit to the air museum. (Saw prototype Cozy.)
6. First ever helicopter ride.

I had a great time as you can see. Another thing that makes this project so much fun is being able to build my Cozy with my silent partner (lots of help, no finances), my seventeen year old son. He was also with me this year at Oshkosh. With all those firsts, you're probably asking yourself what did he do the first two years. Well, the first, year, I spent my time looking at all the kit planes and plans models, walking the flight line for yours. Then I came across some funny looking airplanes with no nose wheels. I walked on, then came back for another look, and another. I left Oshkosh that year wondering if I would ever build an airplane. Then I saw your ad in Sport Aviation, sent away for the info pack and the

rest, as they say, is history. I haven't regretted it for a moment.

Thanks for allowing us to sit in your Cozy and taking time to chat with us. Hope to see you at Oshkosh '96.

Sincerely,  
James Arnold  
Chesterfield, MI

4/21/96

Dear Nat and Shirley,

We both hope you had a good time at Sun 'n Fun this year and that you're both doing well. It's hard to believe that one year has already gone by since we purchased our plans. We are on Chapter 16 now and can't wait until we finish. We plan on moving the plane to a hangar in June as we are running out of room in our garage. Nadine got her private pilot certificate earlier this month, that's one other milestone for us. Now to get the plane in the air.... We look forward to seeing you again at Oshkosh this year.

Marc & Nadine Parmelee  
Novato, CA

4/26/96

Dear Nat,

WOW!!! I have been reading non-stop about the Mark IV...I can't read enough about the Cozy...You have some kind of a plane...And I can hardly wait to get started on my own. I have been reading magazine after magazine and your info pack is great!!! I also found a lot of information on line with Marc Zeitlin. You may want to tell people about his info on the Internet. He does some great advertising for you. Some of his info helped me make my final decision. Well, I am really excited to be a part of the Cozy Family. It is really great to see how everyone praises the Mark IV and you for all your support. Also, I would like to say thank you to Chuck Wolcott for being so kind to tell me of a fly-in that would be close to my home. I can hardly wait to see his Mark IV.

After all that, the reason for my letter is that I wish to order a set of plans. One last thing, if you could print in the newsletter, if anyone has an epoxy pump they no longer need, I would be interested in purchasing it.

Well, thank you Nat for building an airplane with great performance that an average person can afford!!

Sincerely,  
Robert Mancuso  
Los Banos, CA

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