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COZY NEWSLETTER #45
April, 1994

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ARE WE COZY WITH RAF?

It is well known that Co-Z Development has a license agreement with the Rutan Aircraft Factory, which dates back to 1981 and which is still in force. This license agreement gives us exclusive permission to use Long EZ technology and to reproduce portions of the copyrighted Long EZ plans, as required for our side-by-side designs, in return for paying royalties on our gross sales. Because of copyright laws, we state on our plans that they are "published in accordance with a written license agreement with the Rutan Aircraft Factory". This statement does not imply, nor should it be inferred, that either the Rutan Aircraft Factory or Burt Rutan has reviewed and approved our designs or tested them. To allay Burt Rutan's concerns about this statement being misinterpreted, we have agreed to strike it from the cover of plans already printed and to omit it on future printings. Our license agreement will remain in effect, and we shall continue to pay royalties.

COMMENTS ON OUR FLIGHT TESTS

We have received a number of compliments on our aft c.g. flight testing, and we feel pretty good about it ourselves, because we learned a lot, and when we finished, we were not able to make our airplane stall, even when the c.g. was 1.2" aft of the design aft c.g. limit. Contrary to what many people thought, we found that the lower winglets make a very important contribution in protecting lift at the wing tips at

high angles of attack. We were surprised to learn that even the people at NASA, where the Whitcomb winglets were originally developed, did not have any data nor did they know whether the lower winglets were important. As a matter of fact, they didn't offer much encouragement that lower winglets would make any difference. Interestingly, in order to determine the effect of lower winglets, we had to be able to stall the main wing with and without the lower winglets in place. Had we not started out with additional span on the canard, we might not have been able to stall the main wing as easily and see the effect of the lower winglets so dramatically.

Several builders have asked how we were able to stall the main wing without the stall becoming "locked in" and unrecoverable. Of course, we had installed the moving 'weight to aid in recovery if we had gotten "locked in" to a main wing stall. What we found was that the best indication that a main wing stall was occurring was when the airspeed started to drop below the white arc on the airspeed indicator (the arc starts at 50 knots). As long as recovery was initiated by releasing back stick pressure (the stick moves forward by itself) before the airspeed dropped all the way to zero, the elevators were still very effective, and the nose would drop and recovery was effected without having to add power or move the c.g. forward. Even though we didn't think a stall would become "locked in" at the c.g.s we were testing, neither Jim Patton nor I were anxious to continue to hold back stick pressure until the airspeed dropped all the way to zero, to see what would happen. With the lower winglets in place, lateral stability was greatly improved and the main wing wouldn't stall until a little past a c.g. of 101. Then it was just a matter of determining how much to shorten the canard to move the 'safe' c.g. range 1" farther aft.

My educated guess (based upon experience with the Varieze) was that the canard would have to be shortened by 8 inches to move the c.g. range 1 inch farther aft. I decided to do this in two steps, to get an intermediated reference point. It is hard to describe my surprise when, after just shortening the span by 4 inches, I could no longer get the main wing to stall, even with the c.g. as far aft as 103.2. Jim Patton persuaded me to shorten the canard span another 2 inches (making a total of 6 inches) for added insurance to cover variations between builders. With 6 inches less span than shown on the plans I was still able to take off and land at a c.g. 1 inch forward of the design forward limit, which is equivalent to more then 400 lbs. in the front of our plans model Mark IV.

WHAT ABOUT THE 3-PLACE?

The 3-place Cozy was designed using the GU airfoil for the canard. It required a trim change when encountering rain, which IFR pilots found annoying. Vance Atkinson was the first 3-place Cozy builder to adapt the Roncz canard, developed for the Long EZ to eliminate the trim change, to his 3-place Cozy. The Roncz airfoil is a more powerful airfoil, so the canard span must be reduced. Vance chose a 142' span, from elevator tip to elevator tip. He reports did he did aggressive stall testing throughout the approved c.g. range of 97.5 to 102, without being able to stall the main wing. He did this before removing the lower winglets. He does not argue with our findings that the lower winglets are important, and recommends that all 3-place builders leave them on. Although he is satisfied that the 142' span he used is appropriate for his airplane, he suggests that shortening it a bit (2" to 4" in span), would probably provide a greater safety margin against stall without restricting the forward c.g. limit. Thank you, Vance, for all the help you have been to our builders!

WHAT WE HAVE BEEN DOING

We sent out our last newsletter #44 (January 1994) just before Christmas so we could include holiday greetings and go back to Minnesota to spend the holidays with our children and grandchildren. After that chilling experience (it was cold up there!) we returned for a week to catch up on the mail and telephone messages, and then left for a two-weeks vacation in the Caribbean. With flight testing completed, the Owners Manual printed, and the newsletter out of the way, we really enjoyed the vacation. We even stopped in P.R. to visit Cosy builder Armando Vargas, and were able to help him complete his centersection spar. We only had about a week at home, before having to return to Minnesota again to baby sit while our daughter and her husband went on vacation. From the artics to the tropics and back again, talk about contrasts! Dave Martin, editor of Kitplanes, persuaded us to fly to San Antonio to participate in a composite workshop on February 26th. On the way there, before we got to El Paso, our King KX155 nav/com crapped out. It was 12 years old and had been giving us intermittent problems. We had it in the radio shop a number of times and thought it was fixed. We had forgotten our hand-held, so we were incommunicado. We didn't want to return home, so we landed at Ft. Stockton, which didn't have a tower, called flight service and asked if they could get us in to San Antonio sans radio. FSS called San Antonio Center, got us a transponder code and then called the Stinson tower to get permission for us to land with light signals. It worked perfectly! First time I ever had to watch for a green light from a tower. They were even kind enough to send out a car to lead us to Hallmark, where the workshop was scheduled. Once in San Antonio, we elected to trade the KX155 in on a new one, rather than risk more problems.

At the workshop, we felt honored to be included on a panel which included Tony Bingelis and other notable designers. We enjoyed our stay, but guess what. The weather turned cold and rainy, as it always seems to do whenever we go to or through Texas. We had to fly through about 150 miles of bad weather on the way back to sunny Arizona. We now hope to be home until Sun & Fun.

It was embarassing to show our airplane in public without having painted over the patch on the canard tips and the lower winglets. I was finally able to spend a couple of days at the airport to prime, sand, and finish paint these repairs. Now, our plans model Mark IV looks quite presentable again.

SUN & FUN

Last year at Sun & Fun, Cozy builder **Bill Walsh** arranged for a Cozy builders dinner at the Red Barn. It was a resounding success and our private dining room was filled to overflowing with 59 in attendance. This year Bill told us he reserved a larger room which will hold 100, and wants to fill it up. We apologize for not mentioning it in our last newsletter, but we hope to see as many of you as possible there. It will be at 6:30 PM, Sunday April 10th. Bill supplies Cozy and Cozy Mark IV shirts and jackets, and he said he hopes builders will be wearing them to the dinner to show their "Cozy Pride". He would appreciate those who plan to attend to call or drop him a note. His address is PO Box 160884, Altamonte Springs FL 32716 (407) 695- 3543.

We expect to see a large turnout of three-place Cozys on the flight line, and at least three Mark IVs.

OSHKOSH '94

We are planning to be at Oshkosh '94, and hope to see as many of you and as many Cozy 3s and 4s there as possible. It will be our 22nd year! We have scheduled a Cozy builders forum for Saturday, July 30, 1:00 pm, tent #3. **Rex and Barbara Pershing** have taken over the Cozy dinner arrangements at Robbins. It will also be on Saturday, in the evening at 6:00 pm. They have reserved the large banquet hall which can accomodate up to 100 or so people. Dinner this year will be family style, choice of beef, ham, or chicken (or all 3). Cost will be $10.50/person. The Pershings said we might even have some entertainment.

In a chance conversation with Tom Poberezney last year, he mentioned that the EAA museum was planning to build a new wing just for prototypes of experimental designs, and would sure like to have our original 3-place Cozy. We agreed to donate it to the EAA, and our friends, Gene and Carol Davis, who are building a Mark IV next door in Globe, have offered to fly it there.

FIRST FLIGHTS

We have recently received first flight reports ftom two 3-place Cozy builders in France:

1. Barry Dawson, who first flew on Sept. 11, 1992, and
2. Gilles Desgruelles, who first flew on Oct. 26,1993.

In addition, we now have two Mark IVs flying in Florida:

1. **Mike Pinnock**, who first flew on Dec. 3, 1993, and
2. Dr. Charles Larson who first flew on Feb. 20, 1994.

Their letters follow:

Jan. 26, 1994
Dear Nat and Shirley,

First, let me apologize for not writing sooner, but I have really been busy. I am enclosmg some articles, one which was pubhshed after my Cozy was awarded a prize in the French home builders meeting at Moulins last year.

The first flight in my Cozy was on Sept. 11,1992 from the airport at Basle/Mulhouse on the Swiss/ French border. The flight was 30 minutes and without incident. I say this from the aircraft's side, however there were a few other complication involving the authorities which took several weeks to resolve. Basle/Mulhouse is a busy international airport serving France, Switzerland, and Germany, along the border of the 3 countries. The authorities allocated a time slot for take-off when the airport was less busy, that the airspace would be relatively free, and would remain so during my flight. Having cleared the formalities with the authorities who wanted to be present, I climbed aboard, started the engine, and asked for taxi clearance. I was told that due to traffic, I had to hold. I didn't mind, but was anxious because it was a warm day and I was conscious about engine and oil temperature.

Some 10 minutes later I received taxi clearance, but was told to expect a 15 minute delay due to traffic. I decided an engine shut-down was probably wise. Then I waited a further 10 minutes, by which time a 737 was taxiing to take a position behind me. The tower called me for an immediate take-off. I replied negative, I needed a couple of minutes. I attempted an engine start with no luck, and the 737 was getting closer. After several more attempts the engine fired up and I told the tower I was ready. Clearance received, I opened up the throttle and started my take-off roll. It was a great feeling and in no time I was airborne and climbing.

Having previously discussed my test proposals with ATC9 it was agreed that I would keep them informed of my every movement, and they agreed I should stay just to the west of the airfield. Once airbome, I was advised to move @er away from the airfield due to traffic. I was happy and the Cozy was too, she just kept on flying. After all, that's why she had been built!

Time came to rejoin for landing. Clearance received, I entered the pattem for a downwind. By now a 15 knot crosswind had built up. I didn't worry about this, my main concern was to get the bird onto the ground. Being my first landing, maybe I was fast, but no worries because the runway is almost 4 kms long. I don't think I even used brakes, but as I was on the roll- out, I saw that all of the emergency services were on stand-by.

Finally when I came to a standstill on the apron, I was greeted by a large number of colleagues, in particular Andre Geopfert and brother Jean Marc, himself a Cozy builder. My feelings were of satisfaction, joy, and many other thoughts of this nature. I found out later during the champagne that my very good friend Daniel Hedricourt was flying his Cozy to Basle/Mulhouse,but did not arrive in time to see the first flight of F-PDAB. I requested this registration because DAB is my 3- letter code in Crossair, the Swiss airline where I work.

Ever since that day, every time I take the seat in this wonderful airplane, I am filled with excitement to think that I built it. I offer my congratulations to your good selves for having the dream to design this airplane. So far, my flights in my Cozy have been to Germany, England and Holland; and it's great that wherever I go the airplane is a great center of attraction. Thanks again Nat and Shirley!

I have lots of interesting stories to tell about the Cozy during the building stages and the hassles I had with the French authorities due to building in France with a British nationality.I will be visiting Oshkosh with my wife and would welcome the opportunity to talk at the Cozy dinner.

With kindest regards,
Barry Dawson

Dear Nat and Shirley,

The month of October, 1993 was great for me. My Cozy F-WRZZ flew for the first time, 4-1/2 years after buying the plans, and two day later, I became the father of a boy, Tom. I'm a happy flying daddy!

My Cozy 3-place was built per plans, with no modifications except the changes in the newsletter. The engine is a Lyc 0-320 D2A, 160 hp with an Ellison TB, the new 4-pipe exhaust system, a B&T 62x75 prop, B&C alternator, starter and regulator, and a JPI tach and scanner. All work perfectly well. My bird weighs 1036 lbs empty and flies great. The overweight is due to reinforcement of the main landing gear,

because we have a lot of rough runways in Europe, stronger cowling lips, heavy layups and heavy paint.

I spent 5 to 6 hours of ground tests, lifting the nose off the runway, braking hard, and checking engine, speeds, brakes, and my nerves .... I found a fuel leak and had a mag timing problem which delayed the first flight, but the day came: light nose wind, good visibility, temperature 62 deg F. Check list complete, full throttle, 60 kts, the nose lifted, followed by the main wing. Keeping the canard below the horizon, the plane accelerates very quickly and the ROC is really amazing, about 2000 fpm! After 17 min around the airport, I landed smoothly and taxied to the hangar to check everything. The only thing I changed is the max rudder deflection, to about 6" when hard on the brakes, and now taxiing and takeoff are easier in crosswinds. She cruises at 145 kts IAS, 26OOrpm, 41 deg.F OAT, at 1500 MSL. Full throttle, 2760 rpm gives 170 kts without wheel- pants.Thank you, Nat, for this wonderful canard and for all the support you give to the builders. Thank Vance Atkinson and Uli Wolter for answering my questions and Bernard Missol, a Cozy builder for his helping hand.

Sincerely,
Gilles Desgruelles
Paris, France

March 2,1994
Dear Nat,

After 25 months of hard work, Cozy Mark IV N615PM flew on Dec. 3,1993. Congratulations on a set of plans that someone such as myself could follow, and end up vith a plane that flies so well.

The first flight was a dream come true. The Mark IV turned to be an easy plane to fly, and by following the plans, the plane flew perfectly. Other than to make a few cooling adjustments, no changes were needed at all on the airframe. I can't tell you how good it felt to see this labor of love (sometimes) fly perfectly first time out.

After finishing the ground testing, and unwilling to let anyone else fly my plane, I decided to make the first flight. Most of my time, about 550 hours, was in a much more complex Bellanca Super Viking, so I was confident I could stay ahead of the Mark IV. The local EAA gave me some good advice and it paid off. They said when I was ready to fly, to give the keys to the local FBO and let them go over the whole plane for a day, then fly the next day. These guys were great. They looked at everything, including things that I had installed a year ago, and just quit looking at. Well, low and behold, they found a couple of loose ends that may have caused some problems. The biggest surprise was that one elevator hinge pin had loosened and was out of the inboard hinge. They gave me a complete check list of things to look at and correct. Needless to say, I thought it was the best $100 spent on the project.

The next day 615PM was ready to fly. It was a beautiful day in Florida. Winds were light and skies were clear. After taxiing down to runway 4 in Leesburg and going through a complete check list, there was nothing left to do but fly. A couple of close friends and a lot of the local hangar guys had gathered to witness the maiden voyage. With 20 gallons of fuel in the tanks, 23 lbs. of lead in the nose, and 50 lbs. of lead in the passenger leg compartment, I rolled out on the runway and started pushing in the power. With the plane rolling, I went to full power, 2450 rpm with the 3-blade on a fuel injected 0-360. Having many high speed taxi tests behind me, I knew what to expect up to 75 mph. Straight down the center line and easy to control. Dennis Oelmann had said to hold the stick full aft, and this I did. At about 65 mph, the canard started to come up. I just leveled it off and waited for the mains to kick in. Within a

second or two, she just took off, and I started porpoising the nose. It took about 10 seconds to get used to the pitch sensitivity. As I was feeling out the pitch, she kept climbing at around 1000 fpm, speed was about 130. I was scared to death that a wing might drop and opposite aileron would be needed to compensate. This was unnecessary; the plane flew perfectly. After leveling off at 1000 ft, I pulled back power to 2300 rpm. She still wanted to climb, more pitch trim and she leveled off. I was doing about 160 without even trying. Wanting to slow down, I pulled back to 1900 rpm, and with more pitch trim, she slowed to about 145. Everything seemed fine so I kept the speed there. Visibility was great, and here I was, flying my own home built airplane. If my friends could see me now! Victory over all the doubters! It was a rush one does not have every day!

I rolled to the left, then to the right. Tne controls were just where you would expect, balanced and tight. Control movements were almost to small to measure. Having flown nothing but production planes with huge yokes made the side sticks nice. This was the way planes were supposed to fly! After flying around the pattern 3 times, it was time to land, just to make sure my friends on the ground weren't seeing something I couldn't.

The plane flew very nicely, and was much easier than I had thought. The nose gear was left down on the first flight to avoid any unnecessary embarrasment. On the first landing attempt, the approach was made at 120 mph. This proved too fast. The plane just floated the entire length of the 5000 ft. runway. With full power, landing brake up, we were back in the pattern. Second approach was slowed to 110 mph with the same results. On the third attempt, speed was down to 100 mph and I was able to get the mains on the asphalt. I used the entire 5000 ft on this landing, using brakes sparingly. Then I taxied over to the crowd and celebrated, it was a great moment in my life. I owe an awful lot to my good friends Ron Dillard, **Bill Walsh**, Dennis Oelmann and the local EAA chapter. Without them, I'd still be out in the garage. My wife Jerri did have to outdue me. In the middle of my 25 months of labor, she took nine months to make a beautifid little Pinnock. I owe her a great deal for all her support, and especially for the little guy.

It's now February 18th of 94, and here are a few lines about how it's been going since.

91 hours total time now. Added wheel pants. Top speed so far is 197 mph at 2600 rpm and 9,500 ft. Honest cruise speed is 185 mph at 2400 rpm. Fuel burn is 8.5 gph. I have flown many long trips to Chicago, St. Louis, Charleston, and many more through all kinds of good and lousy weather, including very hard rain, very cold temperatures (5 deg. on ground). The plane is a stable platform for IFR work. I let it accidently flip over, broke my new 3-blade, (ouch ...), but did very little damage to lower winglets. Keep that nose down, people, or it will flip one day!

Can't ever get out of an airport fast-too many people asking a lot of questions. Haven't had to pay an overnight fee yet; they like the plane. Feet get cold below 25 degrees. Hard rain will allow some water inside. We are working on this. Landed with a flat nose tire. Uneventful until end of roll out. Then it would not move very well at all. Landings are very nice; greasing them in is the norm. Had to replace a vacuum pump. The first night parked in heavy rain left 5 gallons of water in the nose, even with heavy seals. May consider putting a drain at the lowest point with nose down. May consider the electric nose lift. Nose is heavy with full fuel.

Having owned a few airplanes before this one, I can only say this: In 3 months the maintenance has been nil, which has saved a lot of money over my other planes. Had I not broken the prop, the first 3 months would have been very cheap, only the vacuum pump, tire and oil changes.

Thanks for all the help, Nat. I'll give you another report in about 6 months. Keep the rubber side down.

Mike Pinnock

Feb. 25, 1994
Dear Nat,

How about this? Two Cozy Mark IVs side-by-side (see photo). Mike Pinnock's on the right and mine on the left. Mike has about 100 hours on his. Mine flew Feb. 20th for the first time. It was very stable and flew hands off on the first flight. I have an 0-360 Lyc vtith Ellison TB, B&C starter, alternator, and regulator, and a B&T prop. It is a little heavy at 1231 lbs. I have a 0 time engine and haven't been over 185 mph IAS at 2550 rpm yet. Thanks for a great set of plans and all the help. Mine took 31 months, 2 wks, 3 days from start to first flight.

Regards
Chuck Larson

ENGINES - YOU HEARD IT HERE FIRST!

Superior Air Parts is the largest manufacturer of replacement parts for Continental and Lycoming engines. We got a call from them a short time ago. Seems like they are just tooling up to make new cylinders for 0-360s, and when those are in production, the only parts they won't have in production for 0- 360s will be crankcases and crankshafts. They were making a market survey to determme how much demand there might be for an 0-360 engine kit. That is, a box of all the parts needed to assemble a brand new, certified 0-360 engine. They thought they might be able to supply a kit like this in the neighborhood of $8,000. They could start out by supplying reconditioned cases and crankshafts until they got into production. I told them that this would be the greatest thing that has ever happened in sport aviation. Our local engine shop said that they could put an engine together from all new parts for about $1,000. Could you believe, a brand-new, assembled 0-360 Lyconiing for $9,000, compared to the present list price from Lycoming of about $24,000? This would sure put a damper on automobile engine conversions. I told them that we are getting about 100 new Mark IV builders each year, and the 0-360 was the engine of choice. The best part about this is that Superior is also upgrading the technology. As of this writing, it still looks very encouraging!

MORE ON CRANKCASE SEALS

Nick Parkyn wrote from Western Australia that he purchased an 0-320 Lycoming which had been installed in a Piper Tri Pacer. The log book showed that the crankcase oil seal had been replaced many times. He researched the subject and learned that freezing breather tubes and blowing oil seals is a fairly common occurance in cold climates, and that the Stoddard Aero Service, 2550 E. 5th Ave, Anchorage Alaska 99501 obtained FAA approval for a modification for 0-320, 0-340, and 0-360 engines, consisting of installing a relief valve in the accessory case, to relieve the pressure if the breather tube

freezes shut during cold weather operation. He learned this and obtained the technical information by writing to Univair, 2500 Himalaya Rd., Aurora CO 80011.

PUBLICITY

We need more of you to send in write-ups and pictures of your finished Cozys to both Kitplanes and Sport Aviation. Dave Martin told us that their backlog of completion reports for Kitplanes in increasing, so they decided to devote at least 16 pages to "Completions" in one of their upcoming issues. He asked if we would urge our builders to send in their pictures. It doesn't matter if you have just finished, or have been flying for a few years. The deadline for the special Kitplanes issue is April 18th. SEND IN THOSE PICTURES!

Publicity Addresses

BUILDER HINTS

I may have mentioned this before. If you need to pour paint from a can without spilling and wasting a lot (paint is expensive!), first punch a hole in the trough around the rim to let paint drain back into the can. Then wrap some 2" tape around the rim of the can, extending up above the rim about 1-1/2". Now you can pour the paint out of the can without it running down the side of the can, and any excess will drain back into the can.

FOR SALE

1. Cozy builder Dr. Curtis Smith invented a little gem of a ratchet which locks the nose gear up or down. It is still available for $38, which includes postage and packaging. No need to call, just send check or money order. This little device should be considered a "must' by all 3 and 4-place Cozy builder/flyers. Once you have flown with it you Will wonder how you ever did without it. Allow several months lead time. Contact: Dr. Curtis Smith, 1846 Sextant Dr., Worden, IL 62097 (618) 656-5120.

2. Fuel sight gages, $35.00 per set including postage. Vance Atkinson 3604 Willomet Ct., Bedford, TX 76021-2431 (817) 354-8064.

3. Electric speed brake actuator. Compact. All parts needed for installation, with instructions. $250. Contact: **Wayne Lanza**, 9425 Honeysuckle Dr., Sebastian, FL 32976. (407) 664-9239.

4. Rebuilt aircraft instruments, much less expensive than new, guaranteed. Contact: Howard Francis, 5631 S. Crows Nest Rd., Tempe, AZ 85283 (602) 820-0405.

5. 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 Mark 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.

6. Roncz canard for Mark IV, brand new, 1/4" thick lift tabs, ready to trim to length. Includes torque tubes and elevators. $1490.00. Contact Dennis Oelmann (319) 232-0018.

7. Cozy Mark IV counted cross stitch (needle point) kits to make caps ($5.99), tee-shirts ($7.99), or framed pictures ($8.99). Chart also available ($4.00). Send $2.50 S/H with order or SASE for more info to: **Carolyn Cullen**, 9456 Mast Drive, Las Vegas NV 89117.

8. Cozy 3-place. With much sadness I am forced to offer my Cozy 369CZ for sale. The FAA has stated that my cardiac problems are not acceptable and has pulled my medical. Please spread the word that it is for sale. 3-place Cozy, IFR, many extras. 0-290 Lyc., Sterba prop, King avionics. Bill Teeters, 2731 Timber Trail, Rockford, IL 61107-2850 Ph (815) 399- 0390. Call anytime, I'll respond.

9. **Wayne Lanza** makes a number of very nice goodies for the instrument panels of 3 and 4-place Cozys. His latest creation is a switching and breaker panel for the Mark IV (see pictures). It is similar, but not identical to the one we had made for our plans model, which cost us a bundle. It is located at the top of the panel, which, after trying many different locations, we decided is the best 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 installation very EZ. Cost is $375. We really appreciate Wayne's contribution, and heartily recomend his products to you. contact him at the address and phone number listed above.

LETTERS FROM BUILDERS

Dear Nat,

Having just finished a Varieze, I find transition to the Cozy ... EZ. All of the glass work is the same, as is the foam and other techniques.

I just recieved my foam cores from FeatherLite; I wish I could hot-wire that nice. Featherlite does a complete job with your cores. They make all the required cuts, and all you have to do is the glass work. I feel by the end of summer or fall, I should have most of the Cozy MK IV finished. See you at Sun n Fun.

Richard LaCourse

Feb. 6, 1994

Dear Nat and Shirley,

I'm writing regarding the Mark IV plans I purchased for my husband for Christmas. We've been sitting down each night after dinner to make the necessary changes. My first experience with you was faster service then I anticipated. I ordered the plans for my husband for Christmas in October, not knowing that I was going to have to hide them for 2 months and screen his mail. He was always gettmg airplane stuff in the mail, so I gave him a letter one day which he had to put down before he could read it. I picked it up to throw away thinking it was junk mail, and in glancing at it, realized it was a letter from one of your material suppliers congratulating him on his recent purchase. WOW! You're quick! Thank you!

We ordered T-shirts from **Linda and Bill Walsh** and received them right away also with a nice letter welcoming us to the group, and inviting us to Sun n Fun 94.

I was not real thrilled about the thought of flying in something that I had taken part in building. Not that I don't have confidence in our workmanship, mind you. My husband had me read a newsletter to show me the kind of commaradarie. It was the letter about the propellor bolts and how expensive they are. I said that's too much for a couple bolts. Until I read the rest about the propellor coming off in flight. Then I said ... Oh! Let's buy a couple of extra sets!

It will probably be awhile before we really get started on this next step, but I feel better about it knowing we have some very nice people to talk to. In the meantime, we're looking forward to our next newsletter.

Sincerely,
Kathy Tittle

Feb. 9, 1994
Dear Nat and Shirley,

Just a note to update you on MK IV #195. As the first year ends, I can't help but wonder where the time went. I did spend six and a half months underway on the submarine so at least I have a good excuse for not having it finished.

I have just started chapter 5. Everything has gone well so far, but there is definitely a learning curve. My wife still hasn't gotten involved, she'll watch sometimes, but her hands stay clean. I've been working with **Nick Ugolini** on the big pieces, and he has kept me moving.

I have used RAE so far with no reaction, working in an open garage with no respirator. I use ply 9 hand cream and have no complaints other than my hands sweat when the temp and humidity get high. I plan to switch to Epolite 2427 when my RAE is gone, about the point of glassing the outside of the fuselage. The write-up in newsletter 44 was so glowing, I've got to try the new stuff.

Congratulations on finishing the CG tests. I've never read as much on flight testing of any other homebuilt. It gives me a warm feeling as I work in a cold garage. Thanks for everything and keep up the good work!

Regards
Chuck Foster

Dec. 26,1993
Dear Nat,

I just received newsletter #44 and read with great interest about aft-CG testmg. The info on the lower winglets was particularly timely as I was just about to remove mine at the next annual "since they didn't do anything". They'll remain a permanent part of my aircraft now.

I now have about 100 hours on the aircraft, the limited time being reflective of the cost of avgas ($4.00 per gallon) here (Chuuk Atoll, Micronesia). The Cozy was shipped out to Chuuk (Truk) and arrived in August 1993. I put it together in about a week and was flying here shortly afterwards. It was shipped in a standard 20 foot ocean shipping container with the fuselage tilted sideways and the nose gear retracted so the nose rested on one corner of the container. The right main gear, which was up in the air (the left was on the floor of the container) was supported by a wooden platform. This worked quite well and the airplane arrived relatively intact. There was some scuffing of one strake where I had inadequate padding against the side of the container, and one lower winglet was slightly crushed by excessive weight placed on top of the wing (probably about 1000 lbs of stuff.). If anyone wants more detailed information about how the plane was packed, please write me.

I am writing an article for SPORT AVIATION about converting a Long EZ to a Cozy, as that is what I did in this case. It is just about done and I need to shoot only a few more pictures to finish it off.

Cheers,
Pat Colin, Box 70
Weno, Chuuk State 96942

Dec. 14, 1994
Dear Nat,

I just received the latest newsletter; it's very informative as usual. I really enjoyed the write up on your CG testing. Thanks for doing the work and reporting so well on the results! Enclosed is a check for the newsletter and Owners Manual. Hope you have a great holiday.

Thanks
Cliff Cady

Dec. 12, 1993
Dear Nat,

My Mark IV (ser. #32) is nearly complete. I installed the panel from a Cessna 172 and a Robinson 22 ventilator for cabin heat. My Engine is a 0-360 Lycoming and prop is the 3-bladed Performance Propellor you recommended. Very beautiful And Clark Lydick is a very precise man! I am glad! Now my work is to sand .... prime ... sand ... prime ... sand ... and paint. Merry Christmas and Happy New Year!

Gerard Maurel
Quissac France

Jan 4, 1994
Dear Nat,

Thanks for doing the flight testing. It makes me feel more secure in this design. Enclosed is $15 for the owners manual.

Sincerely,
Laffy L. Olson

Jan 1, 1994
Dear Nat & Shirley,

While deer hunting here in Missouri in November, a step broke on my tree stand and I fell 20 feet, fracturing my back. This incident kept me absolutely out of commission for over a month. I'm doing fine and very lucky to not have any nerve damage. This was at a very inconvenient time, since I wasn't finished biuilding a shop for the Mark IV. The shop is necessary since the project has outgrown my back bedroom, and Donna isn't too keen on taking a wall out of the house. Everything has gone according to the plans and I am very pleased with the progress up to now.

Newsletter #44 was the best yet. The CG testing and results were very interesting and the inadvertent opening of the canopy and being able to maintain full control of the aircraft, although not planned, certainly lends credit to the safety of the Mark IV design. The mandatory change I gladly made in my plans.

I would like you to know that we, as well as the other builders, appreciate the effort you put into keeping us all informed of new design modifications and builder hints. Builder hints have saved me both time and money in my work on the Mark IV. In the 2 years I researched the Mark IV design, and reviewing the plans, the newsletters, meeting you and Shirley and the dinner at Robbins, I can only say that you have made available, in my opinion, the best and safest aircraft design around, and Cozy builders are without a doubt some of the friendliest and best people I have ever met, and I'm proud to be one of them.

We are already planning for Oshkosh '94, and look forward to seeing you there. Take care and God Bless you both.

Kip & Donna Davis
Cozy Mk IV #0218

Dec. 14, 1993
Dear Nat,

Thank you so much for the extensive work on the c.g. limits and the changes that that work brought about. Even though I'm along way from starting to build, I know that my family and I will be so much safer because you went the extra mile. It is also so nice to know that the airplane will fly if the canopy

opens. I've had a couple of hours on the front seat of a Breezy, so I think I'd know the feel - just hope I never experience it.

May you and yours experience the true spirit of Christmas and may the new year be a healthy and happy one!

Sincerely,
John Benton

Dec. 12, 1994
Dear Shirley and Nat,

Let me wish both of you and all the Cozy builders all over the world a Merry Christmas and happy 1994 flying year!

I am making good progress and almost finished with Chap. 13. The canard is finished and fitted, as well as the main gear. So far everything works great, except I have a story on my canard.

I was ready to glass the bottom skin on the canard one morning, but I had a flight in the afternoon, so I was time limited. That made me rush a bit. Guess what? Everything went wrong (Murphy's Law). The skin looked OK but it was not. No time to check and recheck the cores on the jigs, so when I came back the canard was warped. No way to make it straight. Also the flight I was doing was a long night flight (about 10 hours with takeoff at 5PM, so at the end, I was exhausted. I drew 3 conclusions I wish to pass on to everybody:

1. I had to redo the whole canard, losing 1 month's work.

2. Never start a major lay up when you are time limited!!!

3. Don't rush. One day it will fly!

Please remind builders of your note #3 under Builder Hints in Newsletter #39 that Rosenhan wheels, now made by MATCO, have a different bearing spacing than Brock (not recommended), Gerdes and Cleveland. I ordered a Gerdes 4" wheel PN A1230 on p. 154 of A/C Spruce catalog. This was the PN on the wheel they shipped, but the bearing spacing was wrong, and I will have to exchange it.

Sincerely,
B. Lecoq, Paris

Dec. 14,1993
Dear Nat and Shirley,

Thank you for your hospitality during our visit. Anita and I were very impressed. I especially loved the ride in the MK IV. That ride really convinced me that the MK IV was the right plane for me and my family. On our trip back home to Denmark, we planned the project: Modifying our garage, building a workshop in our basement, buying the nessary tools, etc. HOWEVER, as soon as we arrived in Denmark, my new job assignment was as a squadron commander 114 miles from home!! We had to buy

another car so I could drive the 228 miles each day. Taxes on cars in Denmark are extremely high (180%) so we had to pay $26,000 US for a small Nissan. As you might guess, that was the money set aside for my MK IV, so the status report on my MK IV #220 is very short-idle.

In order to use my limited time off (I have to drive 2 + 2 hrs each day) in the best way, I have signed up for a composite workshop hosted by our local EAA chapter. The instructors will be Long EZ builders.

I am slowly but steadily modifying my workshop. It is almost ready and the necessary tools are in place, so I am about ready to start. The final starting time will depend on my job in the Royal Danish Air Force.

The very latest and best news is that I have been assigned another job, this time only 25 miles from home, so now I also have the time to build a MK IV.

I find your writing about c.g. testing very interesting. Amazing how much 6" of canard can influence the flying characteristics.

Sincerely yours,
Michael Schroeder

Jan. 10, 1994
Dear Nat,

It's 8 degrees out this morning, a heat wave is upon us! Brenda and I recently purchased an egg farm about 2 miles from the Dexter Airport and are finally settled in. Our agreement is that when I get the Corvette running, I will be allowed to start construction of the Mark IV. I have a great shop at the farm, heated and large. We suffered a setback on our various projects when an arsonist set fire to my shop-warehouse in Hermon, but we are in better shape now at the new farm. The Corvette will be running soon and I am setting up the shop for plane construction.

I'm hoping to turn more of my business over to son John to free up time for the farm and the plane. Please eat only Eggland's Best Eggs both for your health and Brenda's new business.

Sincerely,
Neil Barschdorf

Dec. 11, 1993
Dear Nat,

Funny how things change as you get older. Since I was in college back in 1980, I have been dreaming of building a Long EZ. I spent the last year setting up a shop to to just that. I acquired a set of plans from Dave Orr (who first told me I should consider your aircraft instead; sharp guy that Dave!) but I refused to relent.

Finally I got everything in order, tools in place, time allocated over the next few years, money planned, and my lovely wife drops a bomb shell. Well, warns me of a bomb shell that is going to drop in about eight months.

So I know that your airplane is the aircraft for me, but just to give me somethmg to drool over until I sell my Long EZ plans and can afford yours, I am sending for your info pack. I'd also be interested in the names of any of your builders in my area (North of San Francisco) in advance. Best regards,

Martin G. Cameron
1701 Madeira Circle
Petaluma CA 94954

Dec. 13, 1993
Dear Nat & Shirley,

I thoroughly enjoyed reading the Mark IV flight test update in the last newsletter. I had heard that the lower winglets were not necessary and intended to ask you about them. Never mind!

My Mark IV #200 is proceeding well. After 260 hours, I have completed through half of chapter 8. My only mistake so far (which I am aware of) was not making the fuel sight gauge depressions large enough for Vance's gauges. The challenge so far has been building it in my single car garage.

In August I met Gai Cadwell and flew in his three place Cozy out at Chino, CA. Any reservations I may have had about building the Cozy were laid to rest that day. It was incredibly comfortable (I'm 6'0') and fun to fly. What a great plane!

Shortly thereafter I met fellow builder **Chuck Wolcott**, whose Mark IV is nearing completion. He's done a really nice job with it, but seeing his made me realize how much work I have ahead of me. I hoped to catch a glimpse of Todd Morgan's Cozy at the San Diego EAA open house, but unfortunately, Todd was out of town at the time. I did, however, meet some very knowlegeable composite builders there. Have a great '94.

Sincerely,
Paul Stowitts

Jan 18, 1994
Dear Nat,

It's been two years since I cut my first piece of foam for Cozy #607. To date I have completed the fuselage through chapter 9, the canard, center section spar, wings, winglets, and am currently installing the main gear. Thanks very much for the information regarding using the canard attachment bushings to drill out the mounting tabs on the gear leg. I looked everywhere for a source for 5/8 x 1/4 bushings and came up short.

Sincerely,
George Mellen

Jan 18, 1994
Dear Nat,

Best wishes in this new year. It seems you have been very thorough in your testing and analysis of the

Mark IV. I feel very reassured knowing I will not be the unaware test pilot. Thanks.

I just started using Epolite 2427. It wets out much easier than Saf-T-Poxy at low temperatures. Today was 65 deg. F. The color takes some getting used to. It's also easier to pump! Tbanks for your ongoing newsletter support and testing.

Sincerely,
Stephen Blank

Dec. 27, 1993
Dear Nat,

My progress to date has been slower than hoped, due to increased job responsibilities, but things are under control now and I am looking forward to plunging bach into this truly exciting endeaver.

Kudos for the recent c.g. work. I am grateful that my decision to go with the Mark IV plans is even more justified. Thanks and continue the good work.

Sincerely,
David Radabaugh

12/10/93
Dear Nat,

Just a short note to accompany my newsletter renewal. I now have 400 hours on my Cozy, and she continues to perform well. I made several nice trips this year. A couple to Florida as well as Oshkosh. About 6 months ago I removed the left (impulse) mag and installed a Jeff Rose electronic ignition system. It is really great. At altitude and full throttle, there is no rpm drop when I shut down the remaining mag! At run up, I get only a 5 rpm drop. I have gained about a gallon per hour reduction in fuel burn (0-320 160 hp). I am still troubled by a higher oil temp than I would like. I get 210 deg. at full throttle cruise, using a semi synthetic oil. Do you have any suggestions?

I am about ready to re-paint the airframe. I never was too pleased with the original job. One should not teach themselves to paint on their airplane! Have you any suggestions on the best way to remove the old paint? It is Deltron urethane with clear coat, and is hard as a rock. I don't relish the thought of completely sanding the whole airframe down!

I have my wheel pants off as I am installing taxi and landing lights in them. I have been working on this for a year (obviously, not with much energy). I made plaster molds and drape molded plexiglas lenses to replace the forward 6" of the wheelpants. I mounted a 500,000 candle power halogen lamp into a bulkhead in each pant. One is aimed straight ahead for taxi and the other slightly down for landing. Tney are done, but need to be repainted and mounted. I hope all is well with you and Shirley. Have a great '94.

Ron Kidd

Dec. 10, 1993

Dear Nat,

Just a note to update you and other Cozy IV builders on the progress of Mark IV N14OCZ.

It's been 18 months now since my wife, Alma & I started the project here in Big Bear Lake. The plane is now in a hangar at the end of our street and still a few months from completion ... we are shooting for Oshkosh '94, but then I was shooting for Oshkosh, '93 too, and didn't make it. Oh, well- forever the optimist! Who else but an optimist would think an amateur could build a high-performance aircraft from scratch...

The plane is on the gear and the airframe has been contoured and ready for primer. I will soon attach bird's eye maple veneer to the panel and install the canopy lock and latches. The engine is on but not hooked up yet; I wanted a place to affix my beautiful Performance 3-blade prop! Hopefully, sometime this winter or spring the project will be finished and flying, although I was disappointed to read I have to shorten the canard to keep it safe from wing stalls. Yours in flying...

Gary & Ahna Buscombe

Dec. 7, 1993
Dear Nat,

N89CZ is now 4 years old and has over 600 hours flying. I had a few thoughts that, based on my experiences, might help someone.

Builders using acrobatic brake cylinders with separate reservoirs should make sure that the reservoirs are adequately vented. Failure to do this will result in stuck, spongy, or no brakes. An AN822 elbow is adequate for this. If you have a concern for spilling fluid because the opening is too large, epoxy the end shut and then drill a 1/16' hole thru the end.

If any frost forms on the Roncz canard (such as might happen while loading the airplane out of the hanger in the early morning) it will significantly decrease lift and extend the takeoff run. Make sure it is absolutely clean!

When the elevator is reflexed upward (such as at high speeds and relatively aft c.g.) the pitch stability of the Cozy is remarkable. However, expect that control stick forces needed to change pitch also increase greatly.

I have removed my MT constant speed propellor. At 400 hours, it is due for overhaul. Since this can only be done in Germany, it involves a lot of expense that I cannot justify.

Lastly, check the rudder stops during preflight. Wear can allow the rudder to move inboard, and at low airspeeds, it might vibrate or flutter. This can be very scary.

(Editor.- No one else has ever reported experiencing this).

Conservatively, my airplane has flown 100,000 miles. If it was a car, it would be worn out by now.

Sincerely,
Michael Marshall

Jan. 11, 1994
Dear Nat,

Commendations for your extensive c.g. testing. In spite of my moaning and complaining about having to shorten my canard, rest assured your efforts are very much appreciated.

Pass on to builders that Alexander Aeroplane now stocks Inconnel 600 wire. It is far superior to stainless safety wire for hot wire foam cutting. It can be stretched tighter and doesn't yield nearly as much as stainless steel. Keep up the good work!

Jim White

MANDATORY MARK IV CHANGES/CORRECTIONS

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