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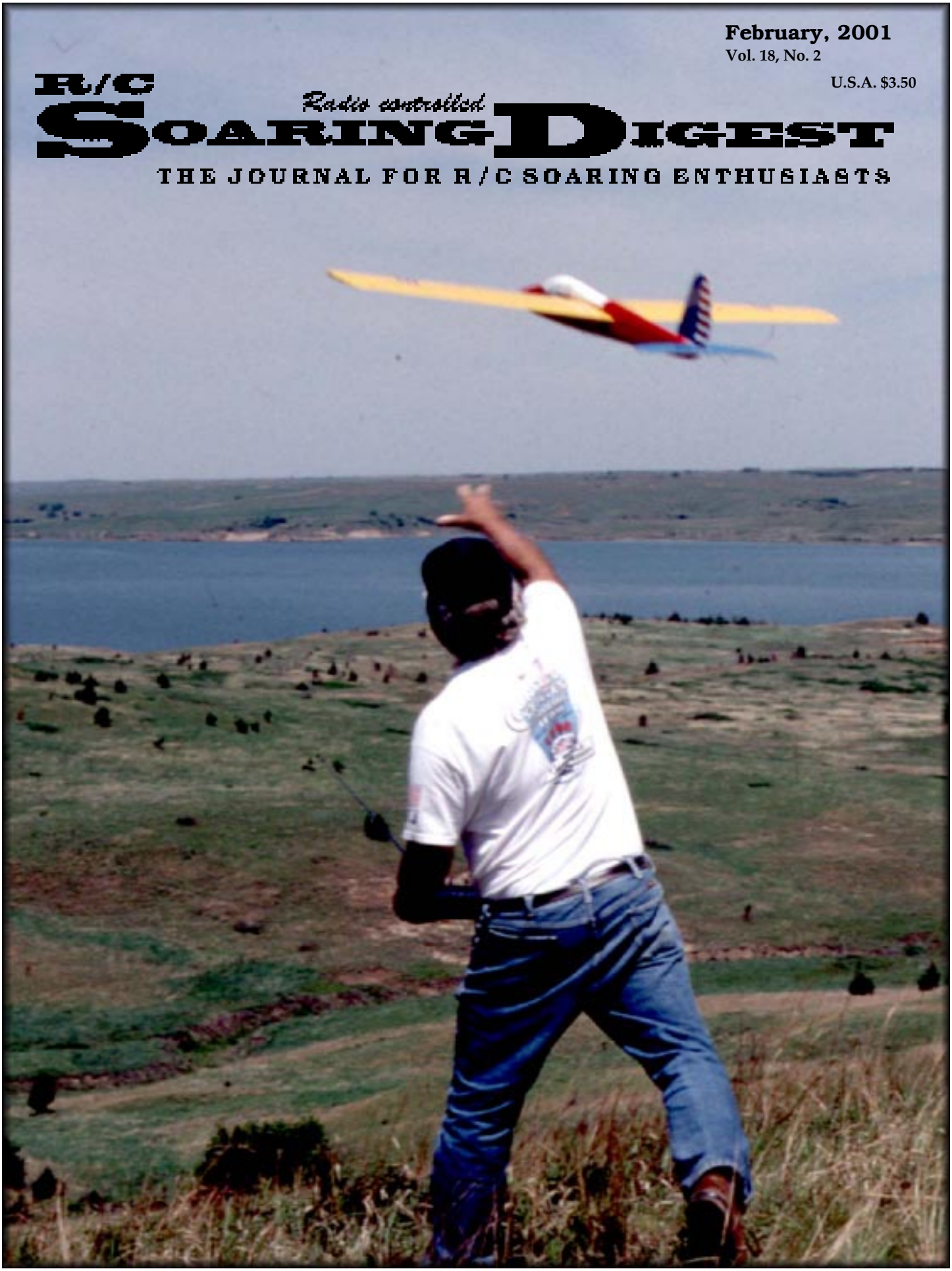
R/C Soaring Digest

Radio controlled

THE JOURNAL FOR R/C SOARING ENTHUSIASTS



R/C Radio controlled SOARING DIGEST

THE JOURNAL FOR R/C SOARING ENTHUSIASTS

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Available from: <http://www.athenet.net/~atkron95/pcsoar.htm>. Or, send 3.5" high density disks & SASE with stamps for 2 oz. Lee Murray,1300 Bay Ridge Rd., Appleton, WI 54915; (920) 731-4848 after 5:30 pm weekdays or on weekends, <lmurray@athenet.net>.

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http://www.halcyon.com/bsquared/RCSD.html

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ABOUT *RCSD*

R/C Soaring Digest (RCSD) is a reader-written monthly publication for the R/C sailplane enthusiast and has been published since January, 1984. It is dedicated to sharing technical and educational information. All material contributed must be exclusive and original and not infringe upon the copyrights of others. It is the policy of *RCSD* to provide accurate information. Please let us know of any error that significantly affects the meaning of a story. Because we encourage new ideas, the content of all articles, model designs, press & news releases, etc., are the opinion of the author and may not necessarily reflect those of *RCSD*. We encourage anyone who wishes to obtain additional information to contact the author. *RCSD* was founded by Jim Gray, lecturer and technical consultant.

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Artwork
Gene Zika is the graphic artist who designs the unique ZIKA clip art.

The Soaring Site

Earthquake News

As many of you know by now, Bill & Bunny, our friends up Washington state way sustained little damage during the recent earthquake that jolted the Seattle, Washington area, and was felt in adjacent states. According to Bill, "The dogs could have run through the house and created more havoc!"

We hope everyone else in the area at the time of the quake did not experience any problems. At least, no more than Bill reports in his recent e-mail!

Web Site Access & Downloading

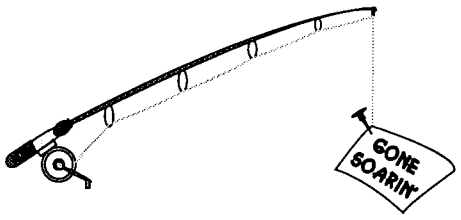
This month, we're providing each of you with a hard copy of the 'R/C Soaring Resource' listings dated February 4, 2001. As most of you know, this listing is also available for downloading in pdf format from the main *RCSD* web page.

What we need to know is whether or not our efforts to keep this reference listing up to date and available on line benefits most of you, or not. I guess the reason for asking the question was triggered by asking a similar question of our traveling reporter, Gordy Stahl. Having sent him a pdf file with the newest listings early in February, he still requested a hard copy be mailed...

And, that led to giving some serious thought to a couple of other e-mail messages recently received...

To make a long story short, back with the October 2000 issue, we said that we hoped to make *RCSD* available on-line, at some point after the first of the year, as a pdf file. (Yes, yes, regardless of what happens, we still plan to continue hard copy distribution for those that want it...) However, a 5MB file (give or take), is a bit larger than most folks, that have sent us e-mail messages, want to tackle every month.

Because of this small sampling, I need to know if the same is true for most of the rest of you. So, let's do a quick survey. For those of you with computer access, please send me an e-mail letting me know how the existing pdf files (including feature article), currently available on-line, work for you, if they're easy to download, and if you have no objection to handling large files, as well.



ZIKA

R/C Soaring Resource Changes & Additions

(The following changes have been submitted this month and will be added to the "R/C Soaring Resource" listing(s): on-line pdf file, and periodic hard copy distribution.)

California (SULA) - URL Addition
Soaring Union of Los Angeles
http://hometown.aol.com/sulaclub/SULACLUB_sPage2.html

Missouri (MVSA) - URL Addition & Change
Mississippi Valley Soaring Assoc.
http://www.mvsaclub.com
Nankivil, nankivil@telocity.com

Oregon (PASS) - URL Change
Portland Area Soaring Society
http://www.members.home.com/pchewn/passinfo.htm

Virginia (TMSS) - URL Addition
Tidewater Model Soaring Society
http://fly.to/tmss

Simply e-mail RCSDigest@aol.com. Address subject as 'RCSD PDF Downloads'. And, let me know what you think. I may not respond to all the messages we receive, depending on volume. But, I will give each e-mail serious thought! And, of course, I'll certainly listen to suggestions that any of you may have.

Happy Flying!
Judy Slates

MIDWEST SLOPE CHALLENGE

Alden Shipp launches a DAW foamie Schweizer 1-26 over Wilson Lake in Russell County, Kansas during the Midwest Slope Challenge in May, 2000. The event is held annually by the Lincoln Area Soaring Society from Nebraska. The 2001 event will be held May 18-20. Please see the event schedule for contact information.

Photography by Dave Garwood, Scotia, New York.

The back cover features Dave Reese, who winds up a Shredair Brisk on the *back side* of Parker Mountain near Acton, California. Reese is an accomplished dynamic soaring pilot and, on this day in May 2000, Frank Cavazos clocked Dave's plane on radar at 137 mph!

Photography by Dave Garwood, Scotia, New York.

Jer's Workbench

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Adjustable Towhook

As most of you glider guiders know, all gliders or sailplanes are not created equal. You can go out and buy a model, just like the one the other glider guiders in your club are flying, but your brand 'X' is just not the same as theirs. If they.are flying higher on their launches, you're likely asking your self, "Why?"

Well, there may be many reasons for their successful launches, but it could likely be the towhook location you selected for your model. Even if you assembled the model based on the manufacturer's suggestions, balanced the C.G., ensured correct movements on all control surfaces and mounted the towhook, it is possible that the towhook needs to be moved just a smidgen or a fraction of an inch. However, in order to move the towhook a simple fraction of an inch, you'll likely have to remove all the servos in order to reach the towhook buried somewhere, down inside the fuselage. With all the work required, in this case, many of us might say, "The heck with it! I'll live with what I've got!"

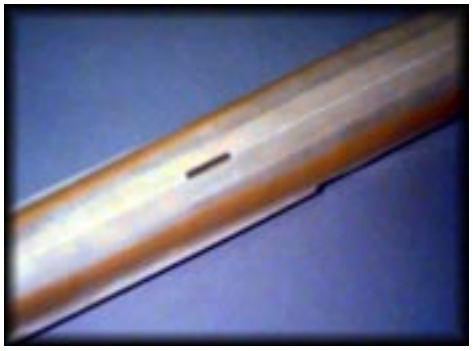
But, what if you have an adjustable towhook? If so, this becomes an easy fix.

In this issue of *RCSD*, Ed Wilson talks about an adjustable towhook that he has installed on his Condor. I liked his idea so much, that I decided to make an adjustable towhook similar to his for my next model.

Looking for supplies, making the parts, and installing the adjustable towhook into a fuselage took less than 2 hours. I was pleased at the ease with which it could be accomplished.

In order to build an adjustable towhook, only a few items are required. Most of us will have the necessary supplies on hand, laying around the workbench or shop. I found a couple of pieces of hardwood

Parts for adjustable towhook: base plate, top plate, and towhook assembly.



Cut slot in bottom of fuselage.

Adjustable towhook installed in fuselage with locking screws in place.

1/4"x7/8"x4" in size, a strip of 60 grit sandpaper, a towhook assembly, and a couple of screws.

I'll refer to the 2 pieces of wood as 'one', the base plate, and the other as 'two', the top plate. Starting with the base plate, shape the bottom side so that it will fit onto the bottom of your fuselage. Then, cut a 1" slot in the center of the base plate. Next, find the center of the top plate and drill a hole, in order to install a T-nut from the towhook assembly unit. Install T-nut on the top side of the top plate. Glue the sandpaper on the bottom side of the top plate.

Next, mark the manufacturer's suggested towhook location on the fuselage. Cut a 1" slot in the bottom of the fuselage. The manufacturer's suggested location should be centered

Can you remember the last time you installed a new battery in your stop watch?

in the middle of the slot. The towhook location can now be adjusted 1/2", either fore or aft, of the manufacturer's suggested location.

At this point, the base plate can be glued onto the fuselage. Be sure to line up the slot in the base plate with the slot in the bottom of the fuselage. Then, lay the top plate, sandpaper side down, onto the base plate and screw the towhook in place.

The sandpaper, between the two plates, will keep the towhook from slipping. After a few flights are made once the towhook is thus installed, and you are satisfied with the towhook location, everything can be locked in place by drilling a couple of holes through the bottom of the fuselage, base plate, and top plate, attaching with a couple of small crews.

One more thought this month. As most of you know, this is the start of the flying season. Can you remember the last time that you installed a new battery in your stop watch? If memory fails, like mine does at times, then it's probably time to install a new battery. If not, it could be quite embarrassing if you were timing a 9 minute flight for someone and your watch stopped at 6 minutes. Or, vice versa, of course!

■

Mississippi Valley Soaring Association

The Mississippi Valley Soaring Association (MVSA) is an active AMA chartered club in the St. Louis/St. Charles Missouri area. We have 52 members and fly on a fabulous sod farm of over 100 acres. Our members fly many kinds of airplanes, ranging from pint-size electrics to huge cross-country and scale sailplanes.

Each year we sponsor a sanctioned TD contest, the MVSA Spring Open, which attracts flyers from several neighboring states; last year, we had over 50 entries. We put on an electric fun fly, and we also conduct two series of club contests, one for HLG and one for TD. We award prizes for individual contests and for season championships in HLG, TD Unlimited, RES, 2-Meter open, and 2-Meter ARF.

Club contacts include Jeff McKee, secretary (mckeeja@earthlink.net) or Tony Estep, president (tonyestep@yahoo.com).

(Additional information is available at the MVSA web site <http://www.mvsaclub.com>. Or, contact Mark Nankivil at nankivil@telocity.com, (314) 781-9175. Or, Peter George at (314) 664-6613.)

LSF NATS

(The following message in support of the LSF NATS was received from long time subscriber, Ron Kukral, New Lenox, Illinois.)

Dear SOARING Vendor,

The League of Silent Flight wants to make the 2001 RC Soaring National Championships the biggest and best NATS ever. The NATS draws the best pilots from around the country, and we want to offer the best in competitive atmosphere. To make this happen, LSF would like to make a special offer to vendors, especially those whose prime product is soaring related.

This years Soaring NATS, which runs from July 22 through 28, will feature a vendor display area. Any vendor interested in displaying his merchandise to the best soaring pilots in the country will be provided with space in the vendor display tent AT NO CHARGE. LSF will provide banquet tables under a large tent for each vendor to display their merchandise. To become part of this vendor display is simple.

To reserve your space, please respond to this message and let me know how many tables (about 2'X8' banquet tables) you will need, and what days you plan on displaying your wears. We will need your response by April 1, 2001, to make certain we have time to reserve enough space for everyone.

We hope to see you at the NATS this year, not just as a competitor, but as a exhibitor, too.

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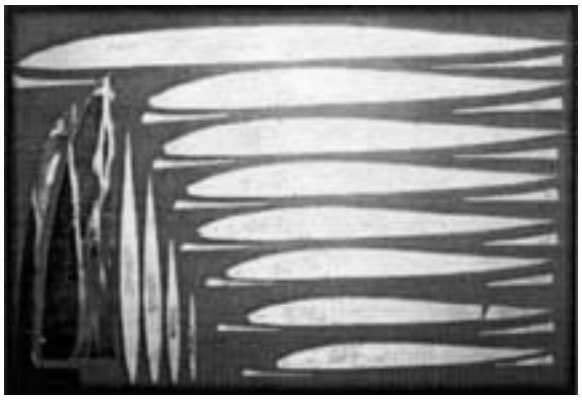
The Blackbird 2M Project, Part 3 Constructing the Airframe

This month we tackle the construction portion of our Blackbird 2M #7 project. With only four major components, the Blackbird builds fast. Besides outlining the basic construction process, we're including some building tips which might be found useful. Additionally, we describe a method for fabricating an aerodynamically clean control surface actuating system which uses off the shelf parts and simple construction.

The first construction task consisted of making all of the required templates. We use the aluminum sheeting sold in hardware stores as roof flashing material. Thirty-one templates were made in all: fuselage side and front and rear fuselage jig blocks, seven wing ribs and 14 wing jig blocks, one elevon rib and four fin ribs, and the main wing tip and inner plywood stiffener outlines. The complete template set can be seen in Photo 1. Driving a fine nail through the template while it's supported by a wooden block will create a punctured dimple on the back side. A couple of these are very effective at giving the template some purchase on balsa, preventing movement during cutting.



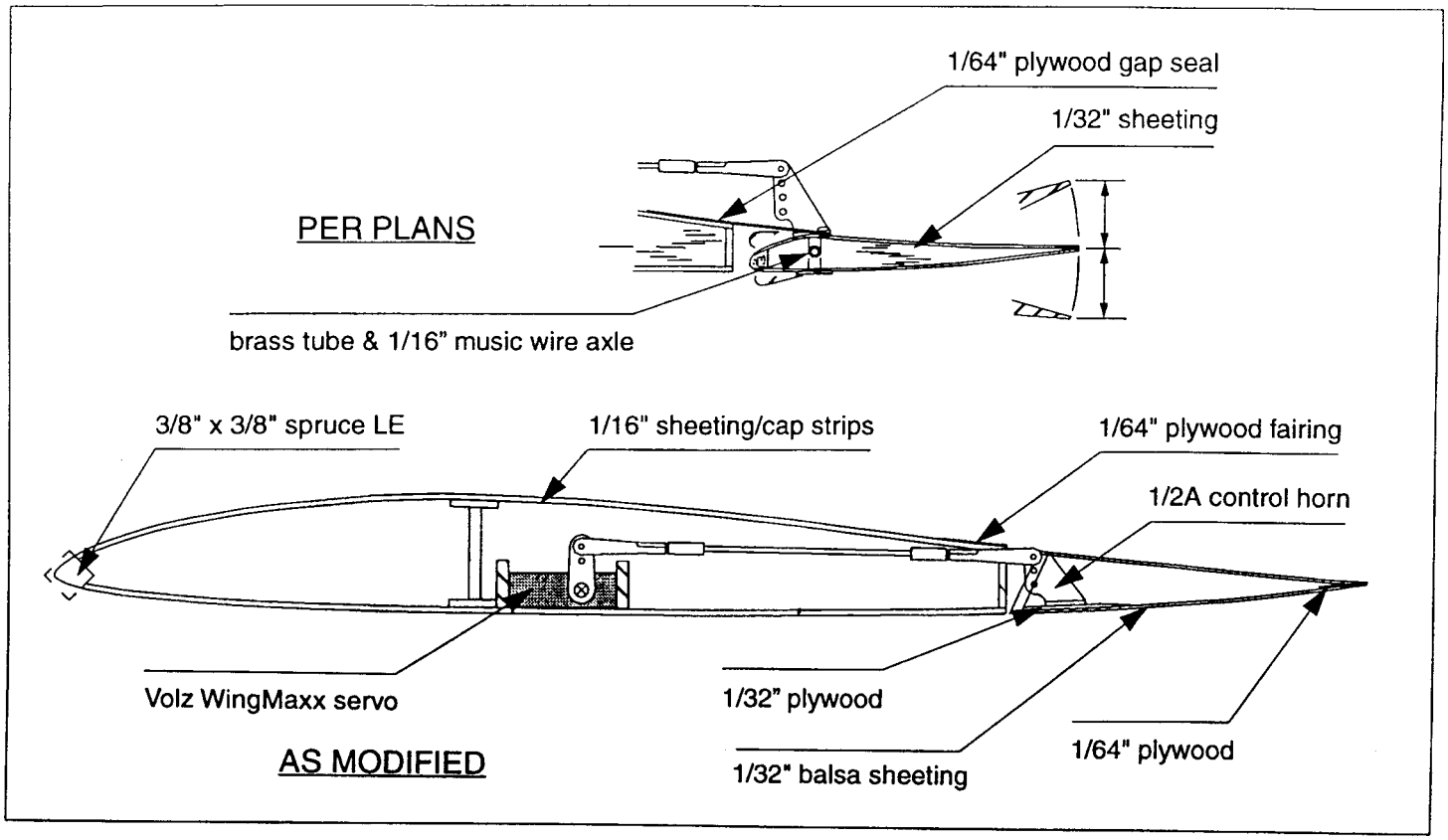
#1 - The complete set of thirty-one templates used during construction of the Blackbird 2M.

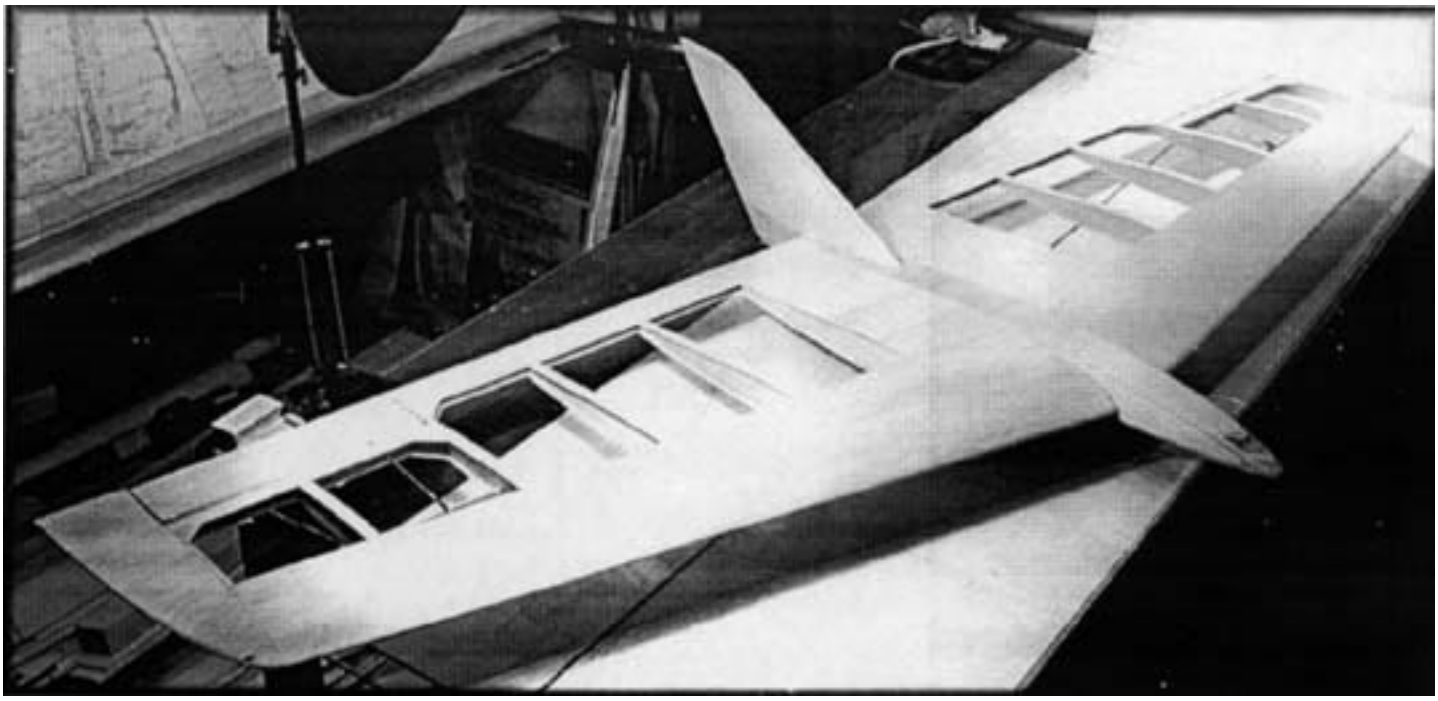
Fuselage

Because the fuselage must accurately mate with both the wings and the fin, we started actual construction with it. The fuselage shape is a derivation of the wing section, so it is somewhat different from that shown on the plans. Using the fuselage side template, we cut the sides from 1/8" plywood. The two sides were tacked together with rubber cement and the holes for the wing rods and the servo cable conduits were then drilled out with a drill press.

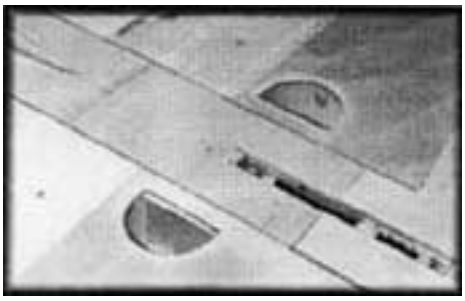
Using steel machinist blocks and metal triangles, and working on a glass surface, the fuselage sides were set upright on the pre-cut lower sheeting and tacked in place. The jig blocks were then placed beneath the trailing edge and the gluing completed, followed by placing the two brass wing rod tubes and constructing their associated spar joiner assemblies. With these items firmly in place, the laminated plywood nose block was cut to a flat sided shape with a table saw and glued into place.

Once all of the internal structure is complete, the 1/8" balsa sheeting can be affixed to the top of the fuselage, along with the hatch cover which is tacked in place with a few small drops of CA. Don't forget to include some sort of base for the towhook. Photo 2



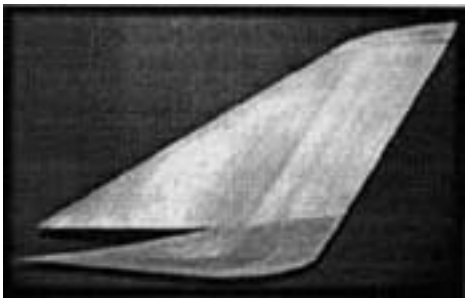


#11 - The completed Blackbird 2M airframe, ready for fiberglass, paint, and covering.



#2 - The bottom fuselage cut-out, ready for installation of an Airtronics adjustable towhook.

#3 - The fully contoured nose. The layering of the plywood really assists in getting the proper shape.



#4 - The completed fin and sub-fin assembly, ready for mounting on the fuselage.

shows an opening contoured for an Airtronics adjustable towhook.

We used a coarse rasp to get the front of the fuselage into its rough shape. Laminated plywood is very difficult to contour with sandpaper alone. Two PermaGrit sanding blocks — one coarse, one fine — were then used to obtain the final finish and prepare for the fiberglass skin. The results of our handiwork are depicted in Photo 3. You may want to wait until the fin is completed before finishing the fuselage with 'glass. We find it best to integrate the fin assembly and fuselage and then 'glass and paint as a unit. The fiberglassing process will be covered in the fourth installment of this series.

Fin and sub-fin

The fin is essentially a hollow block consisting of 1/16" balsa sheeting, a strip of 1/64" plywood to strengthen the trailing edge, four ribs, a tip piece, and a spruce leading edge. The completed fin and sub-fin assembly can be seen in Photo 4. Several builders have commented that a substantial weight saving can be had by using 1/32" sheeting in lieu of the 1/16" shown. Don't try this unless you use a foam core.

Construction is somewhat tedious when using the conventional rib structure, as balsa trailing edge stock must be used as an assembly jig to prevent any twist from being built in. Once set up, however, construction is rapid. Using a foam core may be an easier and more comfortable route for some builders.

The two skins are cut out using the plan outline and the fuselage template, and the right side is internally marked for rib placement. The trailing edges of both skins are sanded to a fine angle to make room for the 1/64" plywood strip and the strip is glued on to the right side. The right side is then placed in the jig and the ribs are glued in. We've found it to be somewhat helpful to wet the outside of the sheeting in the area of the leading edge so it more easily conforms to the ribs in that area. The left side sheeting is glued on, taking special care to keep the trailing edge straight. Once the left side is glued on, any twist which is built in will be permanent. The leading edge and tip piece can be glued on with the fin removed from the jig.

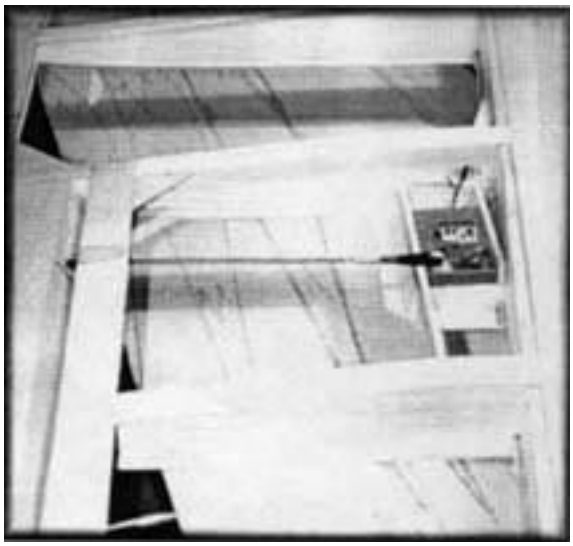
Make sure you use a light touch when sanding the fin, as it's very easy to sand waves and depressions into the skin, making it too thin.

The sub fin is hollow as well, built with an interior plywood core and light balsa "cheeks." We laminated several balsa sheets together for each of the two sides so that we could use the seam lines as guides during the shaping process. Use the fuselage template to get the sub fin contour to perfectly match the rear of the fuse-

lage. The plywood core is cut out to the proper contour and placed on a sheet of glass. One side piece is then glued to it and the assembly is inverted after the glue has hardened. The other side piece is then added.

Carefully match the joint between the fin and sub fin so the completed assembly fits the fuselage as closely as possible, then glue the two parts together. Now shape the sub fin so it matches the airfoil shape of the fin at the glue joint. Shaping this part is a breeze, as the balsa sands easily.

#5 (Above) - Ceiling tile, plans, waxed paper, structure. The bottom leading edge sheeting, lower spar cap, ribs, and sealed finger holes are all in place.



#6 - A close-up of the elevon-wing junction. Notice the control horn is below the finished surface of the elevon. The 1/64" plywood fairing closes off the top of the pushrod slot.

The fin can be covered with MonoKote®, but we've had great success with well sanded gray primer and a light coat of paint. The sub-fin deserves a layer of 1.2 ounce fiberglass. It's easy to mate the fin assembly to the fuselage and then do all of the fuselage 'glassing, sanding, and painting in one fell swoop. But don't mate the fin assembly to the fuselage just yet. As mentioned earlier, we'll tackle this part of the construction process in Part 4.

Wings — getting started

Preliminary construction of the wing is accomplished on a large piece of ceiling tile. The plans are attached to this building surface and covered with overlapping sheets of waxed paper.

All of the bottom sheeting and cap strips are cut to shape and glued together right on the plans, and the lower spar cap is then glued in place. The ribs are tacked in place by applying glue to the flattest portion of the bottom of the rib with a steel block against the side to assure exact vertical alignment. With everything in place, use the leading and trailing edge jig blocks to get the sheeting into contact with the bottom of each rib. A thin metal ruler can also be used to leverage the sheeting against the rib. Glue by using the CA wicking action. Photo 5 shows the wing at this stage of completion.

The servo mounts should now be framed in. Rolled paper tubes can be used for servo cable conduits, and a string of drinking straws for the antenna routing. We made the paper tubes rather quickly by wrapping bond paper around a long 3/8" aluminum tube and using a common glue stick. Two layers is sufficient. The end of one of these tubes can be seen in Photo 6. Make sure all of the conduits exit the wing root so they line up with the predrilled holes in the fuselage sides.

We got both wings to this point and set them aside. Construction can continue without the plans being under the structure, and you want to work on glass or some other stable surface for the remainder. In the meantime, you'll need access to the wing panels with the servo locations known, to assist in building the elevons.

Elevons

The elevons are constructed in a fashion similar to the fin. Set up the jig blocks first and mark the elevon bottom skin for the rib positions. The elevons on our model are somewhat different than those shown on the plans. The Blackbird 2M plans show a Frise-type elevon, incorporated to overcome adverse yaw. See the included line drawing. We have always found this control system to produce an extreme amount of proverse yaw and unnecessary drag when up elevator is applied, in addition to having a complex hinging method. We very much prefer bottom hinging using MonoKote® as the hinge material.

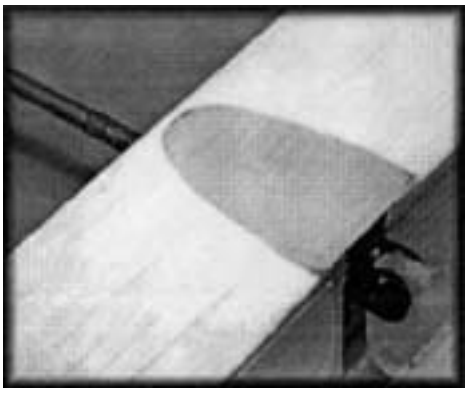
One of the more exciting things we've done on this model is to completely bury the control horn and pushrod assembly inside the wing and elevon. See the line drawing again and also Photo 7. This is possible because the rear of the wing section is relatively thick. (If, in some other application, hinging is at the top, the control horn can simply be inverted and affixed to the upper surface.)

With the bottom skin in the jig, glue on the leading edge, then the ribs. Depending on the eventual servo mount location, determine where the control horn should be. A 1/32" plywood control horn base is first put in place and the control horn attached to it. We mounted the control horn to the plywood base by roughing up the bottom surface of the horn and applying CA glue. Once set, we took a small square of fiberglass cloth, slit for the horn to protrude, and used it to cover the base of the horn and the surrounding plywood. The 'glass was firmly attached to the horn and the underlying plywood with CA. With all of the internal structure complete, and the elevon still in the jig, glue on the upper sheeting.

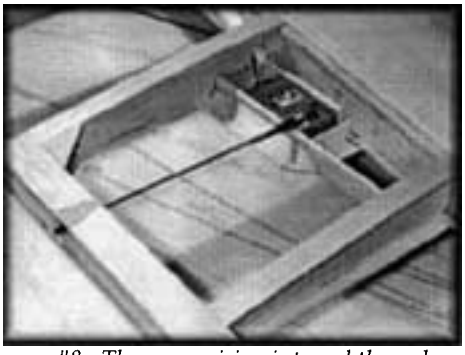
Temporarily attach the completed elevon to the wing using masking tape as the hinge. The end of the control horn and the pushrod opening can be seen in Photo 8.

Wings — completing construction

With both wings nearly half complete, set up the fuselage on a large glass surface and weight it down with all of the jig blacks fore and aft. Insert the wing rods so they protrude from both sides and slide the wing rod receptacles onto them. Slide the wings against the fuselage at the proper location with the wing rod receptacles extending into the wing.



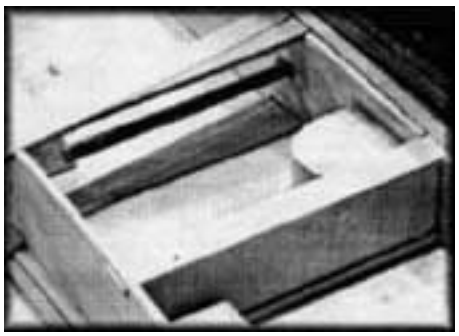
#7 - The entire pushrod and control horn assembly will be internal once the mylar gap seal is in place. The servo and servo arm clevis are accessible through a hatch on the lower surface of the wing, the clevis at the elevon can be easily reached through the hinge gap.



#8 - The servo wiring is traced through a paper tube conduit.

Block up the wings at the proper dihedral angle by inserting balsa strips under the ribs — 1/8" under the first rib, 1/4" under the second. Slide in the leading and trailing edge jig blocks and weight the wings so they won't move. The setup should look like what is shown in Photo 9. Make sure the fuselage and wing roots are in contact with the glass at matching points.

#9 - The fuselage and both wings set up for installation of the webbing in the area of the wing rod receptacles.



#10 - Close-up of the front spar and wing rod receptacle just prior to installing the webbing.

With the wings held in the correct location along the fuselage and blocked at the correct angle, install all of the shear webbing in the area of the wing rods using CA and epoxy as necessary. The rear spar assembly is complete in Photo 10. Working carefully, the wing rod receptacles will be perfectly aligned with the fuselage assembly.

Once all of the internal structure is complete, attach the upper surface leading edge sheeting, root sheeting, and cap strips. The leading edge sheeting works around the ribs a bit easier if the outer surface is dampened.

The last step is to add the leading edge and form it to the correct shape. We use a heavy duty razor plane to get things started, then it's back to the PermaGrit blocks for getting the shape just right.

Putting the three major components together

The entire airframe is now complete. The fin and sub-fin assembly should slide onto the fuselage with a slightly snug fit. Make sure the fin is perfectly aligned on the fuselage centerline before you permanently attach it. The wings will mount on the wing rods and exactly match the fuselage contour from the wing section high point rearward. The receiver and battery pack fit easily in the front of the fuselage. Trace the antenna through the drinking straws and hook up the two servos by simply plugging them in. On the field, the only additional task is taping the wing-fuselage joints. Photo 11 shows the completed Blackbird 2M airframe, ready for 'glassing, painting, and covering.

The next installment will include fiberglassing, covering and painting, gap seals, and our first trip out to the flying field. Stay tuned! (And join with us in hoping for good weather.)

Comments, questions, and suggestions for future columns may be sent to us at either P.O. Box 975, Olalla WA 98359-0975, or <bsquared@halcyon.com>.

Resources

Jones, Dave. Blackbird 2M (full size construction plans). Western Plan Service, 1983. (We are not aware of a retail source for these plans at the present time.)

Kuhlman, Bill & Bunny. Goliath. *RCSD*, February 1988.

—. Suggestions for first 'wings - part II. *RCSD*, March 1991.

—. Aileron differential: some possible effects on performance. *RCSD*, August 1992.

—. A possible solution to adverse yaw in plank planforms. *RCSD*, May 1996.

Note: All of the above articles are available as reprints within the two "On the 'Wing... the book" volumes available from B^{2}Streamlines.

■

HAVE SAILPLANE, WILL TRAVEL!

By Tom H. Nagel
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Thermal Vagrants Meet Slope Hogs
"What is so rare as a day in June?"

Actually, a day in February is 6.19% more rare, statistically speaking, even if you take leap year into account. A day in February in Ohio, when it is 50 degrees F. and a bunch of GPS crazed sailplaners can slope all afternoon, is a helluva lot more rare than that even.

We had pretty nice weather both days this weekend. Pete Carr sent me an e-mail and said he was going to be flying thermal out at the field Saturday. Pete had joined our club last summer, but by chance we had never met up except on *RCSE*. I was eager to meet Pete - he has the lowest AMA number of any living person that I know, and I figured I could learn a lot from somebody that experienced. (My own AMA number is so long that you can use it as a long distance phone number; if you dial it you get a phone sex line run by some woman in Wichita, Kansas. But I digress.) I had errands to run on Saturday, and it was 3:30 or so until Andrew and I got to the field. Also, the partial sun promised by the NWS had not materialized.

Pete said he'd had three 10 minute flights despite the overcast, so I let him winch the Crunchbird up the line. By this time it was 4 pm, and the skies had cleared. This was the first time I'd flown the Crunchbird since re-building the canopy to provide little cockpits for Andrew's "Little Bad Guys." GI Joe and his girlfriend GI Josephine handled the launch pretty well, and came off the hook right into a boomer. The Little Bad Guys seemed to be doing pretty well, taking turns at the controls, I assumed. I set the trims, put the transmitter down, and let the Crunchbird thermal itself up into the sky.

Pretty soon I began to worry about how to get down. When the sky had cleared, the whole field seemed to be going up all at once. I tried some loops. No Little Bad Guys bailed out, but I was still way up there. Fortunately, as it turns out, GI Joe and his girlfried are spin qualified, so we got down OK. Fifteen plus minutes on one launch - not too bad for a couple of plastic action figures.

Sunday was supposed to be even nicer, so Pete and I planned on flying again.

Sunday morning arrived, February 1st, and the NWS called for 50 degrees F with up to 15 mph winds out of the south. I started getting calls from other club members. Chuck Rumele and the Newark Slope Gypsies had invited us out to their cow pasture slope site for an afternoon of slope flying and splot landings. I called Pete, and also invited a new flyer, Clint, to come along.

The NWS did it to us again, and the 10 to 15 mph winds never materialized. But there was a nice south breeze, augmented by methane-generated thermals from the cows and bulls down the hill. I think we wound up with 10 pilots on this little slope. Everybody was flying the lightest planes they had along.

Let me tell you something about sloping with cows. If you run out of lift and have to land at the bottom of the hill, you'd better hoof it down there and retrieve your plane right away. Cows are not very intelligent, and don't have much interest in slope soaring as far as I can tell. But they have enough curiosity in them to walk over and stomp your sloper into mulch if you don't go after it. Unlike your typical bad slope landing, a cow stomping incident can destroy your radio, battery, servos and, in general, cast a pall over your entire afternoon.

Clint, with his first slope plane, a DAW handlaunch, stayed up as well as anyone. Lots of people caught thermals off the end of the slope. Paul

Wiesse thermaled a Foameron almost out of sight. There were high cirrus clouds and we flew with sun dogs in the sky most of the day.

At one time we had 8 planes in the air, and Clint was getting apoplectic. He had never seen more than two sailplanes in the air at once, let alone tried to fly in heavy traffic. He asked if there were rules if two planes were headed at each other. I suggested that the best rule in such a case was to be sure you were the one flying the foamie. A few minutes later, Chuck and one of the other Newark flyers demonstrated this principle, and the crowd thinned out a little. Those Newark guys still fly balsa 100% of the time, and look at my Pibros like it was something left over from a carry-out pizza box.

The highlight of the day came late in the afternoon when Chuck dove his camera plane in from a good altitude, and snapped a photo of two groundhogs who had come out of hibernation early and were apparently feeling amorous. The groundhogs were startled by the sailplane's shadow, and ducked back into their burrow.

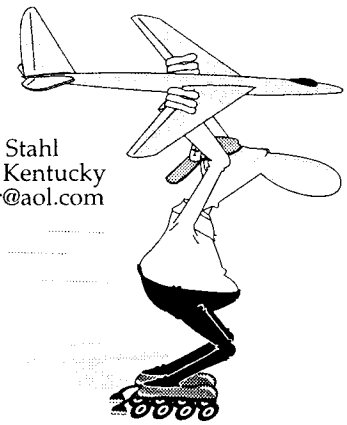
According to folk legend, if you use a sailplane to snap a photo of two groundhogs caught "in flagrente rodentus" then we will have at least six more weeks of Bill Clinton.

Shortly thereafter the wind died out, and as the sun was setting we all packed up and left. Despite light lift all day, everyone was happy with the outcome of the gathering, except perhaps the two groundhogs and Kenneth Starr.

GPS is banished for at least a few days. We thermal vagrants have stories to tell, and the Slope Gypsies have planes to rebuild.

A Happy Slope Hog Day to you and yours! ■

GORDY'S TRAVELS



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A 'Trip' Into the Mind of a Handlaunch Designer & Oleg's SECRET HLG

A few years ago I had the fortune to meet and fly with a Russian transplant living in the Raleigh, North Carolina area, Oleg Golovidov. It was clear that he was a true RC sailplane craftsman, an excellent thumb and a brilliant thinker. He flew his own design composite open class and 2m planes, which proved capable of winning big contests (at least in his hands).

They say that birds of a feather... And every time I would see Oleg at a contest he was with others who also were interested in pushing the envelope of sailplane design.

It wasn't long before he got the hand launch bug, finding the close-in flying and how much more the models designed played in providing a competitive advantage. It was a perfect media for his ideas and Oleg's Secret HLG was born!

Oleg shipped it to me to fly for the review and, while I took it out in bad weather to fly, I have to admit little sailplanes are NOT my cup of tea. So, I immediately took it over to Bruce Davidson, Kentucky's top HLG Champion for his evaluation.

But before I get to that part, what I saw when it arrived was a very clean, professional quality composite, pod and boom sailplane. The tail feathers were built up and covered with a thin mylar covering. They were extremely stiff in spite of the fact that the plane weighs just over 8 oz. The wing is a polyhedral, a 'bent' center section with double taper tips that provide added polyhedral bends. Since the plane was shipped to me in assembled form, the tips were simply taped on with some thin 1/2" wide clear tape, which makes it great for transporting and could also help to save the wing on those unfortunate tip-first landings! Normally, the tips would be just glued to the center section, like on any other plane.

The wing construction consists of blue foam, a dart of carbon to the tips and a light skin of glass. The triple break planform reminds me of the old Frank Weston Mosquito. The fuse-pod has plenty of room for the radio gear and the wing has two alignment pins at the leading edge and a single screw near the back. Throwing is done with a finger peg through the fuse.

I found launches to be excellent, and I do not have a big arm. Unlike some of the current top HLG designs, I found the Secret to be very easy and stable to fly into the cold, tight thermals I encountered. Once in a core, it seemed to really enjoy 'wrapping-tight', with no tendency to over-roll.

I always wonder what the thought process has been for someone to dream up a competition, high-end, sailplane design. Here's Oleg's own words:

"The thought process?..."

"You actually believe there was some thought put into the design?"

The design was started about a year ago when I was preparing for the Baltimore (Bass Championship) HLG contest. I wanted a plane that would be very stable, both in pitch and roll and, at the same time, very maneuverable. Also, a plane that would look nice and be distinctive in the air - a plane that could be slowed down to a crawl in a thermal without losing rudder responsiveness.

Oleg flew this plane and won nearly every round of every contest he entered in the 2000 season, incuding BASS and CASA handlaunch contests. It "floats on a bird fart" and won't just fall down in sink.

Wing: 1.5 M tripple modified 7035, 200mm cord
Fuse: Fiberglass pod with tapered boom
Tail: Built-up (pull-pull rudder)
Flying Weight: 7.5 - 8 oz.
(basically a 3.2 oz. wing loading)

High pitch stability requirement leads to a large tail on a relatively long tail boom. High pitch controllability required a large elevator (about 80% of the stab area) - high deflection angles also help with pitch response. (I use a lot of control deflections.)

High rudder response requirement lead to a lot of dihedral and multiple panel breaks to provide strong roll coupling and immediate roll response to a rudder deflection. The plane can be wrapped around its tail in a thermal and still have some more rudder control left to spare.

Multiple polyhedral breaks also provide smooth span-wise flow during turns due to the absence of sharp panel breaks. It also provides a gradual built-in wash-out for the outer panels at all positive angles of attack. [Since the panels are angled up, their angle of attack is always smaller than the plane's angle of attack, by a factor of the cosine (dihedral). The greater the angle of attack, the larger the difference - automatically adjustable wash-out.] Not to mention, the multiple polyhedral breaks definitely look nice in the air!

The shape of the fuselage, besides the cool looks, provides a sufficient spacing between the wing and the finger peg to avoid damaging the wing when throwing. Built-up tails are strong and light, reducing the inertia moments for better stability and pitch damping.

That's the story behind the Secret's design. Now, with the new side-arm launch planes invading the market, Secret will not be your highest launcher. But, it is still is a good plane for those believing in the conventional launch, or those who enjoy the physical aspect of HLG (and muscle pains), or more importantly it is still extremely functionally competitive for short task rounds when the turnaround-launch time is critical.

Oleg's Secret comes as a kit; you build the tails from the kit balsa and cover it with the mylar film (also provided). For time-constrained builders, the tails can easily be converted to a plain sheet balsa design using about 3/16" light balsa. The built-up tail on my plane was so light that the battery had to be located under the wing, in order to achieve the recommended CG position.

The wing comes in two pieces. You have to cut the outer panels, sand the bevel angles, and then join all of the panels. The center joint bevels are done at the factory.

The fuselage comes completely done. The carbon tail boom is pre-molded into the fiberglass/Kevlar fuselage at the factory. Attach the wing to the pod, attach the tails, and install the elevator control rod and rudder control cables (all included) – and you are ready to put your receiver and battery in and head out to the field.

The price of the kit is $290 and it is available from Tom Broeski of T&G Hobbies. Tom can be contacted at:

tjb@adesigner.com
http://www.adesigner.com/oleg1.htm

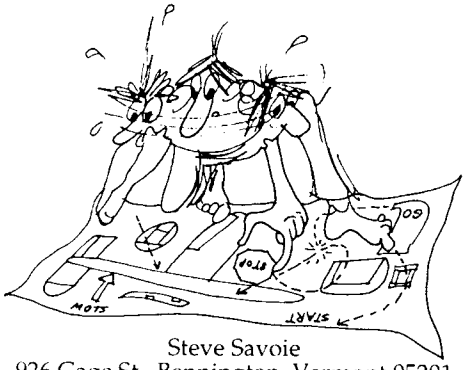
Oleg will be happy to answer questions about the design, if you'd like, at golovido@engineous.com.

I'm a lucky guy, as my travels allow me to meet lots of talented guys in the hobby, not to mention getting to test fly some pretty interesting planes! See you on my next trip!

■

(Above) Steve Savoie smiles at a 500# load. The part is underneath!

"SHORT CUTS"



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When a Hobby Really Helps Foamie Construction Techniques

So many times, our hobbies benefit from the technologies of real world technical advances, design and techniques. I find it refreshing when just the opposite happens.

I've recently been involved with a project at work which allowed me to put some foamie construction techniques to good use. This program was picked up from another composites fabricator that went out of business, so we picked up all the existing tooling and fabrication techniques that were used. The product we are making is a thin wall, carbon fiber tube (trapezoidal cross section) that is about 70" long. Once molded, the part is machined to yield a truss work on three of the 4 faces.

The fabrication process involves rolling 19 plies of carbon fiber onto a round mandrel. The lay up is removed from the mandrel and a latex bladder is then installed inside the lay up. The entire assembly is installed in a matched metal mold and then is heated while 100 psi is applied to the inside of the bladder to mold the C.F. up against the tool faces. This part is not painted and has what we call an "as is finish," so if the outer faces do not mold perfectly, there's a lot of labor to correct.

As I mentioned, we inherited this program from another fabricator and were stuck with their tooling. We had been experiencing a lot of finish rework so I took a closer took at the process and wondered, "Why wrap the carbon fiber on a round mandrel and then force all 19 plies to deform into a trapezoidal shape?" My intention was to wrap the carbon on a trapezoid mandrel, but the trick to make it work is the exact sizing of the mandrel. I had to develop a cheap and simple way to make mandrels that held their shape during the rolling of the prepreg carbon fiber and subsequent removal from the lay up. The fit is so tight that it usually requires two people pulling. Mandrels are adjusted sometimes by as little as .020" of an inch.

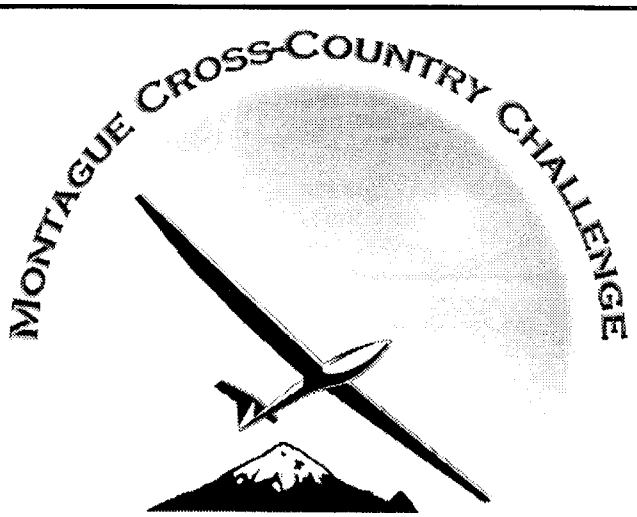
The material of choice here is Rohacel R-51. It comes in 2.5" x 49" x 99" sheets and we always have full length scrap laying around, so we cut a piece to size. This was done quite easily and we then rounded over the sides to a correct radii. We needed to surface the foam as well as get some strength into it. We thought of molding a thin layer of carbon fiber onto the mandrel, but that would take too much time and expense. We only needed the strength for withdrawing the mandrel along its length; the Rohacel has more than enough compressive strength (128 psi) to roll up on. The solution was as close to me as my P-51 DAW Foamie. You guessed it: filament tape and 3M-77 spray.

We simply placed the foam mandrel on a straight edge with double faced tape, shot it with 3M-77 spray, and then covered the faces with the 2"

wide filament tape. This worked out great; we had more than enough strength to withdraw the mandrel from the tacky C.F. We did have to make a few adjustments to the size, but we found we could wrap the mandrel with .008" thick self adhesive release film to increase the size or just simply cut a new mandrel to a smaller size.

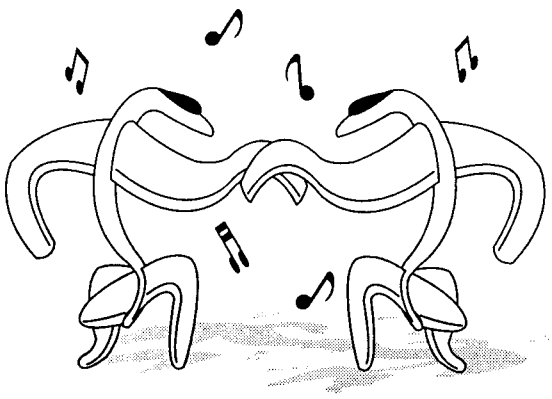
It was nice to use a technique from my hobby and apply it to real life problem solving, thanks to those foamy kit manufactures. I've enclosed a couple pictures of the process, as well as the final part (.150" wall thickness) undergoing a 500# proof test. Never underestimate the strength of carbon fiber!

■



2001
MONTAGUE
CROSS COUNTRY CHALLENGE

Location	Siskiyou County Airport, Montague, CA
Date	June 8th - Practice and LSF Task Days June 9th & 10th - Contest Days
Time	Pilots meeting at 9 am, flying begins at 10 am
Task	Saturday - Free Distance within a prescribed course Sunday – Speed Task, 2 hour minimum, 3 hour maximum
Classes	Open, 3 Function (Rudder, Elevator, Spoiler or Rudder, Elevator, Flap)
Prizes	Plaques will be given to 3 members of the top 3 finishing teams in each class.
Entering	Entry fee is $75 per team, each team will receive 3 event T-Shirts, and 3 tickets to a Saturday night BBQ. All entries must be received by May 8th, 2001. There will be a limit of 20 teams, so don't delay.
Lodging	Camping is available on-site, no services available. Motels are available in Yreka, approximately 12 miles away.
Info	For additional info please call Dean, Scott, or Randy at (541) 899-8215 days, or Dean (541) 899-7034 evenings, or e-mail us at dgair@cdsnet.net.



Molded Condor – Part 2

By Edwin Wilson
Louisville, Kentucky

In part one, I talked about ordering one of Ed Slegers' new molded Condors and I gave a brief description of the kit specs. I used the break time between Christmas and New Years to assemble the plane. Note I said assemble and not build. The molded Condor is like most of the other molded planes out there in that they are closer to being an ARF than a builder's plane. This is not all bad in my opinion, so don't crucify me. I consider myself a builder so there were some "personal customizations" I did to the plane. Back to that in a minute.

As I mentioned last time, the Condor comes ready for you to do the basics to get it ready to fly. Install servos, hook up pushrods, install tow hook, finish radio installation, balance and you are ready to go. Sounds easy but a little time spent doing everything right will make for better flying and a more enjoyable plane.

I installed Voltz (Wing Maxx and Micro Maxx) servos in the wing and Hitec HS-85MG's in the fuselage. I made some wood mounts for my wing servos out of 1/4 inch plywood. My mounts wrap around the servos on three sides like a letter "C" and are epoxied into the wing. The servos are then mounted with 3/8 inch socket

head screws for easy removal if needed. After balancing and all my customizing, I came up with a finished weight of exactly 70 oz. This includes me balancing the plane at its forward CG location. As time goes on, I expect to drop 2-4 oz. as I move the CG back.

Because of the record breaking cold and snow this December in Louisville, my Condor has had to sit around waiting for its chance to fly. Finally, on January 7th, for the first time in three weeks, the temperature rose above freezing. With snow still covering the ground, local club member, Tom Hall, bravely offered to hand tow the Condor up on its maiden flights.

While Tom laid out a short line stolen from a high start, I hand tossed the Condor a couple of times all the while trying to dodge some snow patches and land in the clear areas. Radio set up was easy, as I did not have to do any new programming to my Airtronics Vision radio. It still contained my old Condor in its memory. This was nice as, on one of my hand tosses, I dumped the flaps and did a spot landing between the snow patches. The elevator and crow mix with the flap was right on. How lucky can you get?

Everything checked out ok, so on went the towline. On the first launch, the Condor out ran Tom and flew off the line 20 or so feet in the air. A combination of conservative nose weight and not enough up elevator caused the Condor to dive and fall off the ring. Out came some nose weight and some up trim was added. Now, let's try this again. The second launch was about 50 feet up and I had time to set the elevator for a flat glide. On the third launch, Tom *really* pulled. The Condor leaped out of my hand and pointed its nose almost straight up. Even with our short towline, the Condor leveled out at about 100 feet. From that height I got a nice seven minute flight.

This one flight told me that I am going to like this plane. Even with the plane balanced at the forward end of the CG range, I felt comfortable with the Condor. I was able to speed up and slow down the Condor using just the trailing edge camber settings. Tracking was right on. I was even able to make another spot landing. The cold put an end to our flying for that day.

I am currently looking forward to some warmer weather and a chance to start moving the CG back and see what this plane can really do. I have no problem with saying that, compared to other planes in its class, Ed has a winner with the Molded Condor. Contact Ed directly for price and delivery information. The waiting list forms to the right.

A late note

Ed Slegers contacted me to tell me the CG position listed on the first set of instructions was TOO far forward. He recommended that I could move the CG back an additional 3/8 inch. Current instructions have the CG correctly marked.

My Condor Modifications

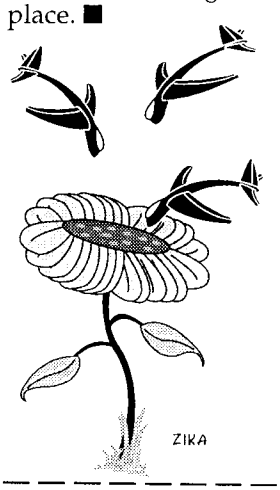
I never, I repeat NEVER, build any model completely stock. I know I am not alone out there. There are many reasons why. Some are cosmetic. Some may be to improve performance, while some may be just to improve reliability or strength. Truthfully, some are because I want to. I thought I would run through some of the modifications I did to my kit of Ed Slegers Molded Condor.

If you have been building models for a while, you have your own idea as to how you want a plane to be set up. I'm not the guy with all the answers, but I have built and flown more than a few planes in the last 43 years of flying models. I have had my share of heartaches and successes along the way and I have picked up on a few things that work for me. I hope you find something useful.

Let's start with the servo tray. Some planes like the Condor are designed to have the servo tray glued to the fuselage sides and then have the joint reinforced with fiberglass. I prefer to install rails, along the inside of the fuselage, made from scrap spruce spar material. My rails, that the servo and receiver sit on, run from the battery area to behind the leading edge of the wing. I then epoxy the servo tray to this ledge. In the case of the molded Condor, I added a second tray aft of the servo tray. On this tray I mounted my receiver using Velcro tape. I also leave an opening between the trays to route my wires to the receiver. This makes for a very neat installation and easy access. This set up takes a little more time, but I believe it makes for a stronger nose section. The pictures I think show this clearly.

The Condor came with a block of hard wood for the tow hook. I replaced this with a 1/4 inch X 1/2 inch X 8 inch piece of plywood. I rounded the bottom edges and epoxied this into the plane bottom. To this I mounted the tow hook and my landing skeg, purchased from Tim McCann.

Finally, I picked this idea up from Ed himself a few years ago. Instead of having multiple holes in the bottom of the fuselage as you look for the optimum tow hook location, I used my Dremel router and cut a slot in the bottom of the fuselage where the tow hook goes. I then made up a block of hard maple and drilled and installed my tow hook T-nut. I also glued a strip of 80-grit emery paper to the bottom of the block. I installed my tow hook through the slot and tightened this down to the block on the inside. When tightened, the emery paper will bite into the softer wood of the plywood mount and I now have an adjustable tow hook to work with. I have never had this set up slip even on a moderate zoom launch. Once the optimum tow hook position is determined, a screw can be run up through the fuselage into the inner block, locking the tow hook into place. ■



EMS Nimbus 4 at West Windsor, NJ.

Landing a Large Scale Glider in Crosswinds

by Joe En-Huei
Windsor, New Jersey

Introduction

When I land my large-scale gliders at a huge field, I can often bring the plane in directly into the wind to minimize the plane's ground speed. However, at a field with a narrow, bi-directional runway, crosswind landings become necessary, a demanding task in my opinion. Although the crosswind landing technique is the same for models and real gliders, landing full size gliders in a crosswind is easier because real gliders fly much faster and because the pilot sees and feels the attitude of the plane.

Prepare To Land

Uncouple the rudder from the ailerons prior to entering the landing pattern - this is important. The ship should be trimmed to fly faster and should have sufficient altitude to account for a higher sink rate during crosswind landing. The downwind leg of the landing pattern should be extended a little bit further (if the field permits) compared to a normal landing approach. I also set the flaps at neutral position for crosswind landing. Note that the ailerons and rudder controls are "opposite" to the eyes when the glider flies toward you on final approach. If necessary, do a simulated approach to get used to the orientation.

There are two methods to land scale gliders crosswind – crab or side slip.

"Crab" Method

On final approach, use ailerons to keep the wings level. The nose of the sailplane will naturally yaw into the wind because the wind pushes the fin downwind. Very often, the plane tends to drift downwind. When this happens, use rudder to increase the "crab angle", apply opposite ailerons to keep the wings level and increase air speed to keep the plane from wobbling (may lead to unrecoverable tip stalling). Prior to touch down, use rudder to align the nose of the sailplane with the runway. Also use spoilers to adjust the glide path on final approach.

"Side Slip" Method

I have noted, during a side slip landing, that the rudder acts like an elevator and elevator acts like a rudder. When the "side slip bank angle" increases, this effect becomes more significant.

After lining up the glider with the runway on final approach, use ailerons to lower the upwind side of wings (the plane will slip toward the wind direction to counteract the crosswind). Meanwhile, use "opposite rudder" and elevator to maintain the heading of the plane and approach air speed.

If the plane tends to drift upwind, decrease the bank angle slightly. If the plane drifts downwind, increase the bank angle slightly and increase airspeed if necessary. Again, use spoilers to adjust the glide path on final approach. Prior to touch down, level the wings.

Comparison of Two Methods

In general, scale gliders can be landed

International Scale Soaring Association

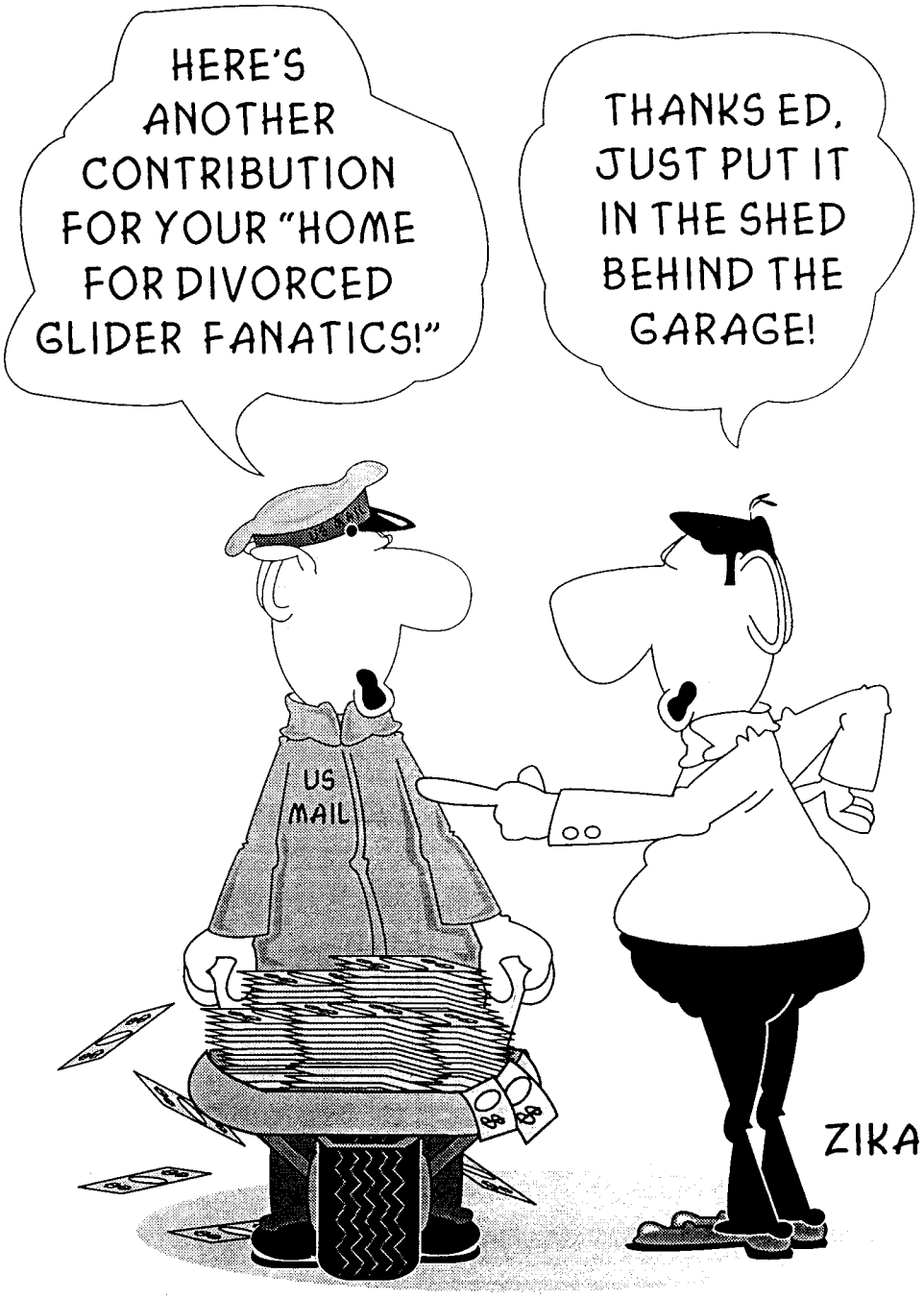
There is a growing interest in scale soaring in the U.S. We are dedicated to all aspects of scale soaring. Scale soaring festivals and competitions all year. Source for information on plans, kits, accessories and other people interested in scale. For more information, write to:

International Scale Soaring Association
37545 Oak Mesa Drive
Yucaipa, CA 92399-9507
e-mail: 70773.1160@Compuserve.com
web site: www.soaringissa.org

crosswind at a slower ground speed using the "crab" method and it's easier to do the "crab" landing. However, in strong crosswind conditions, the "crab" method may not work because the glider tends to wobble and drift downwind. Under this condition, usually I combine both methods (mildly side slip the plane "without" applying opposite rudder and meanwhile maintain a crab angle), as long as I can land the plane safely.

Acknowledgments

I would like to thank my good friend M. Scott Borden of Louisville, Kentucky for his valuable feedback and editing this article. I think it is a good idea to know how to land large-scale gliders in crosswinds safely and smoothly. ■



THE NATURAL SIDE OF THERMAL SOARING

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http://www.athenet.net/~atkron95/pcsoar.htm

Instant Soaring Forecast Plots from Your PC

One of the pleasures I have had in writing this column is to have readers find your efforts useful. Greg Ciurpita is one such person. Greg has made a major contribution to the thermal forecasting technology by his computer programming skills. Greg has written an article that I believe you will find quite useful. Using his program, I now can click on an icon on my computer desktop and in seconds the program obtains the needed information from the Weather Bureau via the internet and presents a ground level corrected air temperature vs. altitude plot on my screen. An instant look at this plot and I know what the trigger temperature will have to be to get to a specific altitude. The January 2001, *RCSD* issue detailed information about the plot itself and compared it to Pearson trigger plots used by many full time sailplaners, and the weather man's friend, the Skew-T plot. This month, you can read how to get the icon and program on your computer. Greg not only provides four TCL scripts (programs) but instructions on modifying the main script to customize it for your use. The editing can be done with a simple word processor such as Word Pad.

An Adjusted Lapse-Rate Web Script

by Greg Ciurpita
Somerset, New Jersey

In the September '99 issue of *RCSD*, Lee Murray continued a series of articles with part 4 entitled "Examples of Good and Weak Soaring Conditions." He discussed the fact that air temperature generally decreases with altitude, that over night cooling creates an inversion layer where morning ground temperatures are cooler than the air just a few hundred feet above, and lapse-rate, where an expanding air mass cools by a predicatable amount as it rises. He also referenced several web pages that provided up-to-date weather data. This peaked my curiosity.

I was just learning to fly, and wanted to know if it was me, or really not that good a day. I thought it would be useful to study weather data in order to be able to identify good soaring conditions. Since I was willing to take afternoons off from work to go flying, I wanted a good way of predicting better than average soaring days. This ultimately lead to a simple computer program that fetches weather data off the web, reformats it, and plots it in a more useful form. The figure is an example of the output.

It shows upper-air (radiosonde) data for station KOKX, Brookhaven, Long Island, and the 24-hour ground temperature summary for Trenton, NJ (KTTN). The script was run around 5:30 PM on Jan 29, 2001. The two solid lines represent upper-air data, and the small circles represent 24-hour ground data. The latest ground reading (5 PM) is at the bottom. Small straight lines from the small circles represent wind speed and direction (pretty calm). The ground reading with concentric circles representing noon, indicates variable winds (more on this later).

The solid line on the left represents actual upper-air data. The solid line on the right represents ground adjusted data. Since rising masses of air decrease in temperature by approximately 5°F/1000-ft, the curve on the right represents the ground temperature that must be exceeded for rising air to reach that altitude. For this data, an air mass at a ground temperature of less than 33° would not rise above roughly 1500 ft. But once ground temperatures exceed 33°, the air mass could rise to 4000 ft. This is the case at noon, which reached 33°, and where variable winds were recorded. I would suggest that this is a good example of the *noon balloon*.

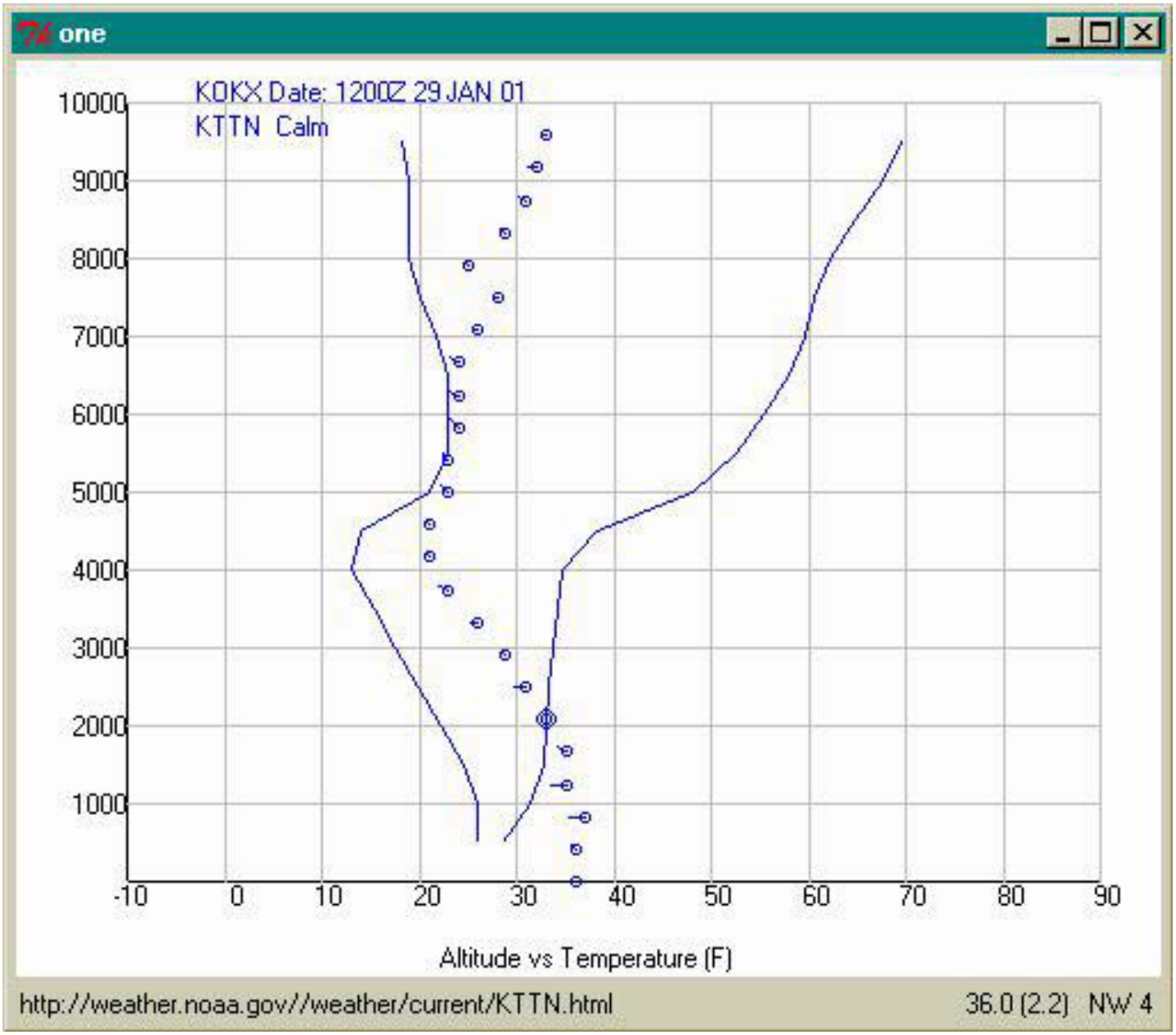
The program is written in TCL (tickle), one of several scripting languages popular today. It is well suited for reading web pages using sockets, string processing, and graphics, but weak at arithmetic processing. The TCL interpreter can be downloaded from http://dev.scriptics.com/software/tcltk/downloadnow82.html. The TCL download package contains libraries and examples, besides the interpreter and .dll files needed. These are useful if you want to learn more about TCL, and use it in more sophisticated applications.

The weather program files can be downloaded from http://ciurpita.tripod.com/weather/weather_4.zip. The zip file contains five .tcl script files, a readme file, a desktop shortcut, and examples of the two types of web pages downloaded in a tmp directory. The *tmp* directory is needed in the working directory for the scripts to work properly.

```
#!wish82 -f

source readurl.tcl
source plot.tcl

set colorList   {red brown blue black}
set altMax      10000.
set WIDTH       400
set HEIGHT      400

set stations {KIAD KALB KOKX}
source upperAir.tcl

set stations {KBLM KLNS KTTN}
source 24HourTemp.tcl
```

The main script allows some variables to be set, and then calls other scripts. The first line runs the TCL window interpreter. The next two lines load sub-function files. The next four line set TCL variables to customize the display. *ColorList* identifies the sequence of colors to be used in displaying more than one station's data. *AltMax* sets the maximum altitude to display. *WIDTH and HEIGHT* set the display window size. The next two lines select the upper-air stations to collect data from and then process it (i.e., upperAir.tcl). And the last two lines select the local stations to collect 24-hour weather summary data from and then process it (i.e., 24HourTemp.tcl).

This is a simple, nonuser friendly program. To select different stations, you need to modify (or copy and modify) the main script, using any text editor, such as notepad or wordpad. I typically collect upper-air data from two additional major weather stations at Washington, DC (KIAD) and



Albany, NY (KALB). I also collect 24-hour data from a station nearer the ocean at Belmar, NJ (KBLM). So my script has the lines:

```
set stations {KOKX KIAD KALB}
source upperAir.tcl

set stations {KTTN KBLM}
source 24HourTemp.tcl
```

You can change the color sequence to your liking. The same sequence is used for both upper-air and 24-hour summary data. You may need to add more colors if you display more than four stations.

Every day, *radiosonde* balloons are released at major weather stations all over the world to measure air temperatures, dew point, wind speed and direction. Measurements are made twice a day at 0 and 1200 hours (GMT). Greenwich Mean Time is equivalent to Zulu time and Coordinated Universal Time (UTC), and is the *time as reckoned from the meridian at Greenwich, England* (Webster's). Data for the U.S. is usually available within the hour from the web at http://weather.unisys.com/upper_air/skew/index.html. The Unisys web page provides a U.S. map that graphically identifies the weather stations with this information, and which can be easily selected to display the data in a variety of forms.

Local ground weather conditions are also monitored by many more weather stations and local airports. They normally collect ground temperatures, dew point, wind speed and direction. Local weather summaries for the past 24 hours are also available over the web from NOAA, for example, at: http://weather.noaa.gov/weather/current/KTTN.html. Local weather stations can be located from web pages for each state, for example, at: http://iwin.nws.noaa.gov/iwin/nj/nj.html.

I look forward to your comments and suggestions for improvements. I can be contacted at ciurpita@bell-labs.com. I would like to see some graphical sailplane analysis programs developed as TCL-scripts that can easily be distributed.

■

CROSS COUNTRY SOARING

Scott Gradwell
Medford, Oregon
scott@xcsoaring.com

Improving the SB-XC

I would like to continue from last month with a few more improvements for the SB-XC.

Included in the RnR kit are some plastic flap strips. They are glued to the front of the flap after it is cut out to give you a sort of gap seal. I found that something else that works well is using open class, gap sealing tape. You can fasten the tape to the top of the flap and slide the gap seal portion under the skin of the wing. This gives you a perfect seal all the way down to about 70 degrees. I know some people like their flaps to go down to 90 degrees, but you have to remember we are not spot landing these sailplanes. I also made a fillet between the wing and fuselage. I did this by first mounting the wing using the replacement nylon bolts. Then I drew around the wing where the fuselage intersected the wing. I then taped mylar to the wing and put some fiberglass tape that had been wetted out with epoxy over the line. I think the tape was about 1" thick. I made sure that about 1/2" was on either side of the line.

Once the epoxy had cured, I took the wing and layed it back down into the wing saddle, using some epoxy and structural filler to make a fillet between the tape and fuselage. Once this cured, I took the wing off, cutting and sanding down the tape until it was a nice even distance from the fuselage. I then went back and made the fillet with epoxy, using an easier sanding filler such as West Systems filler or microballons. Once that had cured, I gave it a final sand and ended up with a fillet that fitted with wing like a glove.

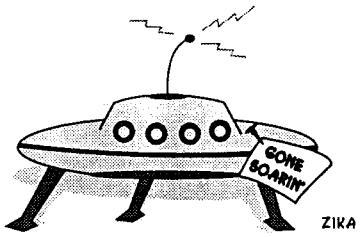
I duplicated this procedure on the top fairing and was able to get that to fit just as well. One of the more important modifications I feel that should be made to the SB-XC is changing the rudder to a pull-pull system. It isn't that hard and I feel like the aerodynamic and mechanical advantages are worth the effort.

Since the rudder is asymmetrical, I cut the front of the rudder off and replaced it with a piece of balsa that I rounded evenly on either side. I used three Robart hinges and drilled the pins out of them. I replaced the pins with one long piece of aluminum tubing. This way I can pull the tubing out and easily remove the rudder. It also makes certain the hinges are all in the same line so you won't have any binding.

I am sure there are many more improvements that can be made to the SB-XC and I would like to hear from anybody that has any ideas. I think the kit is a great place to start and can be made even better with just a few improvements.

Now to change the subject, I have started a web site dedicated to R/C cross country soaring. It is www.xcsoaring.com. I don't know much about web site creation, but I am learning as I go and am having fun doing it. I hope that people will submit material so we can share information and see what others are up to. Also, it will be the main source of information for the Montague Cross Country Challenge. If you have any suggestions on the web site, please send me an e-mail.

Next month's column will be a surprise, even for me, I don't know what to write about yet. ■



Please send in your scheduled 2001 events as they become available!

SCHEDULE OF SPECIAL EVENTS

April 7-8, 2001
Deep South Championships Houston, TX
Mike Kovacs, j_m_kovacs@yahoo.com
http://www.geocities.com/j_m_kovacs/hawks/dsc2001.html

April 28-29, 2001
DARTS Aerotow Fly-In Muncie, IN
Paul Siegel, (513) 561-6872
psiegel@fuse.net

May 4-6, 2001
Texas National Tournament Segoville, TX
Pancho Morris, (972) 681-1098
Lynn Williams, (214) 321-3005
tooth@hawkpci.net

May 18-20, 2001
Midwest Slope Challenge Wilson Lake, KS
Loren Blinde, mwsc@alltel.net
http://www.alltel.net/~mwsc

May 19-20, 2001
CSS/OVSS May Memorial Contest Cincinnati, OH
Ed Franz, (859) 586-0177
ejfranz@fuse.net
http://www.cincinnatisoaring.org

June 9-10, 2001
Montague XC Challenge Montague, CA
Dean/Scott/Randy, (541) 899-8215 Days
Dean Gradwell, (541) 899-7034 eve.
dgair@cdsnet.net

June 9-11, 2001
CANAM Aerotow Ontario, Canada
Bill Woodward, (519) 653-4251
woodwab@mail.mohawkc.on.ca

June 22-24, 2001
Mid-South Soaring Championships Huntsville, AL
Ron Swinehart, RSwinehart@msn.com
(256) 722-4311 days, (256) 883-7831 (eve)

June 30 - July 1, 2001
SKSS UNL Thermal Duration Newark, DE
& RES (Aerotow & BBQ on Saturday)
Jim Faassen, (302) 239-4923
jfaassen@dca.net
http://www.silentknightssoaring.org

July 7-8, 2001
CRRC RES Contest Sudbury, MA
http://www.charlesriverrc.org
Pete Young, (617) 484-0640
pwyoung@ix.netcom.com
Dick Williamson, (781) 981-7857
williamson@LL.mit.edu

July 21-22, 2001
Gerry Knight Memorial Ontario, Canada
Scale Aerotow Rally Y2001
Phil Landray, (905) 468-3923,
linden@niagara.com
Don Smith, (905) 934-7415,
donsmith@mergetel.com
Charlie Rader, (905) 563-4108

August 11-12, 2001
Pacific Northwest HL Regional Redmond, WA
SASS R/C HLG
Adam Weston, (206) 766-9804
red@tgworks.com
http://www.reddata.com/SASS

August 11-12, 2001
CRRC Soar-In Contest Sudbury, MA
http://www.charlesriverrc.org
Dave Walter, (978) 562-5400
dwalter@ultranet.com
John Nilsson, (978) 368-7136
nilssonj@rd.simplexnet.com

September 14-16, 2001
Last Fling of Summer Broken Arrow, OK
Dave Register, regdave@aol.com

Reference Material

Summary of Low-Speed Airfoil Data - Volume 3 is really two volumes in one book. Michael Selig and his students couldn't complete the book on series 3 before series 4 was well along, so decided to combine the two series in a single volume of 444 pages. This issue contains much that is new and interesting. The wind tunnel has been improved significantly and pitching moment measurement was added to its capability. 37 airfoils were tested. Many had multiple tests with flaps or turbulation of various configurations. All now have the tested pitching moment data included. Vol 3 is available for $35. Shipping in the USA add $6 for the postage and packaging costs. The international postal surcharge is $8 for surface mail to anywhere, air mail to Europe $20, Asia/Africa $25, and the Pacific Rim $27. Volumes 1 (1995) and 2 (1996) are also available, as are computer disks containing the tabulated data from each test series. For more information contact: SoarTech, Herk Stokely, 1504 N. Horseshoe Circle, Virginia Beach, VA 23451 U.S.A., phone (757) 428-8064, e-mail <herkstok@aol.com>.

BBS/Internet

Internet soaring mailing listserve linking hundreds of soaring pilots worldwide. Send msg. containing the word "subscribe" to soaring-request@airage.com. The "digestified" version that combines all msgs. each day into one msg. is recommended for dial-up users on the Internet, AOL, CIS, etc. Subscribe using soaring-digest-request@airage.com. Post msgs. to soaring@airage.com. For more info., contact Michael Lachowski at mikel@airage.com.

Books by Martin Simons: "World's Vintage Sailplanes, 1908-45", "Slingsby Sailplanes", "German Air Attaché", "Sailplanes by Schweizer". Send inquiries to: Raul Blacksten, P.O. Box 307, Maywood, CA 90270, <raulb@earthlink.net>. To view summary of book info.: http://home.earthlink.net/~raulb

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For Sale - Business

PARACHUTES: $15 (includes S&H U.S.A.) Send check or money order to Dale King, 1111 Highridge Drive, Wylie, TX 75098; (972) 475-8093.

FENDERS! Cover your aileron and flap pushrods with a set of fenders, to help protect bottom of wings & control horns. Price (check or money order): $5.95 (set of 4) + $3.50 S&H USA. (Texas residents add 7.250% sales tax.) Viking Models, U.S.A., 2 Broadmoor Way, Wylie, TX 75098; (972) 442-3910.

DesignAire: EASY TO USE AIRCRAFT DESIGN SOFTWARE (PC). 3-D sketch, performance, Wt/Bal, inertias, color graphs, panel analysis, static stability, airfoils, FAR 23A loads and envelope. Runs "airfoil ii". $119. JammAero POBox 69, Wallops Island VA 23395. www.jammaero.com.

SAILPLANE PLANS: Copies of ORIGINAL, SOAR BIRDY & BIG BIRDY plans as originally kitted by Bridi Hobby. $12.00 per set, shipping included. BUZZ WALTZ, 68-320 Concepcion Rd., Cathedral City, CA 92234, 760-327-1775 or e-mail, <buzzwaltzrc@excelonline.com>.

T.W.I.T.T.

(The Wing Is The Thing)

T.W.I.T.T. is a non-profit organization whose membership seeks to promote the research and development of flying wings and other tailless aircraft by providing a forum for the exchange of ideas and experiences on an international basis. T.W.I.T.T. is affiliated with The Hunsaker Foundation which is dedicated to furthering education and research in a variety of disciplines. Full information package including one back issue of newsletter is $2.50 US ($3.00 foreign). Subscription rates are $20.00 (US) or $25.00 (Foreign) per year for 12 issues.

T.W.I.T.T., P.O. Box 20430
El Cajon, CA 92021

Sailplane Homebuilders Association (SHA)

A Division of the Soaring Society of America

The purpose of the Sailplane Homebuilders Association is to stimulate interest in full-size sailplane design and construction by homebuilders. To establish classes, standards, categories, where applicable. To desiminate information relating to construction techniques, materials, theory and related topics. To give recognition for noteworthy designs and accomplishments.

SHA publishes the bi-monthly ***Sailplane Builder*** newsletter. Membership cost: $15 U.S. Student (3rd Class Mail), $21 U.S. Regular Membership (3rd Class Mail), $30 U.S. Regular Membership (1st Class Mail), $29 for All Other Countries (Surface Mail).

Sailplane Homebuilders Association
Dan Armstrong, Sec./Treas.
21100 Angel Street
Tehachapi, CA 93561 U.S.A.

The League of Silent Flight (LSF) is an international fraternity of RC Soaring pilots who have earned the right to become members by achieving specific goals in soaring flight. There are no dues. Once you qualify for membership you are in for life.

The LSF program consists of five "Achievement Levels". These levels contain specific soaring tasks to be completed prior to advancement to the next level.

Send for your aspirant form, today:

League of Silent Flight
c/o AMA
P.O. Box 3028
Muncie, IN 47302-1028 U.S.A.

http://www.silentflight.org

The Vintage Sailplane Association

Soaring from the past into the future! The VSA is dedicated to the preservation and flying of vintage and classic sailplanes. Members include modelers, historians, collectors, soaring veterans, and enthusiasts from around the world. Vintage sailplane meets are held each year. The VSA publishes the quarterly BUNGEE CORD newsletter. Sample issues are $2.00. Membership is $15 per year. For more information, write to the:

Vintage Sailplane Association
1709 Baron Court
Daytona, FL 32124 USA

The Eastern Soaring League (ESL) is a confederation of Soaring Clubs, spread across the Mid-Atlantic and New England areas, committed to high-quality R/C Soaring competition.

AMA Sanctioned soaring competitions provide the basis for ESL contests. Further guidelines are continuously developed and applied in a drive to achieve the highest quality competitions possible.

Typical ESL competition weekends feature 7, or more, rounds per day with separate contests on Saturday and Sunday. Year-end champions are crowned in a two-class pilot skill structure providing competition opportunities for a large spectrum of pilots. Additionally, the ESL offers a Rookie Of The Year program for introduction of new flyers to the joys of R/C Soaring competition.

Continuing with the 20+ year tradition of extremely enjoyable flying, the 1999 season will include 14 weekend competitions in HLG, 2-M, F3J, F3B, and Unlimited soaring events. Come on out and try the ESL, make some new friends and enjoy camaraderie that can only be found amongst R/C Soaring enthusiasts!

ESL Web Site: http://www.eclipse.net/~mikel/esl/esl.htm

ESL President (99-00): Tom Kiesling (814) 255-7418 or kiesling@ctc.com