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R/C Soaring Digest

Radio controlled

THE JOURNAL FOR R/C SOARING ENTHUSIASTS

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ASK 13

Wayne Parrish poses with his 1/3 ASK 13. Although it's quite large, it tows very well. On a bet, Wayne got it up with a ST-300 Telemaster, which only has about 20 lbs of thrust.

Photography by Robin Lehman, New York.

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Scott Gradwell, Bill & Bunny Kuhlman (B^2), Robin Lehman, Lee Murray, Tom Nagel, Mark Nankivil, Dave Register, Dave Sanders, Steve Savoie, Jerry Slates, Gordy Stahl

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

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The Soaring Site

A Very Busy Year

Summer should be drawing to a close, soon. And, fall will be upon most of us, with the building season just around the corner. My, how time flies when we're having fun!

As of this writing, many *RCSD* columnists and contributors are on the road, or in the air, headed for or returning from special sailplane events. Robin Lehman has been checking out the large scale sailplane scene in Europe. Our traveling reporter, Gordy Stahl, took a detour to the San Diego Championships on his way to Virginia with a stop over in Jamestown, North Dakota. (Whew!) Steve Savoie jumped on a plane for the Soar Utah 2000 event in Salt Lake City, Utah, having sent his precious models on ahead. He plans to enjoy the marvelous flying touted by the Utah folks, and meet up with other sailplane folks, including Dave Garwood, Rich Loud, and Dave Sanders. And, Scott Gradwell's been very busy up Northern California/Oregon way, which he covers in his column this month.

Although Dave Register's been 'basking' in the extreme heat up Oklahoma way, he's still found time to build and fly the Highlander 2-meter EPP foamie, which he covers in his column this month. Not to be outdone, the heat in Texas has been matching or outdoing Dave's. Still, Jer reports on a handy tool he constructed this month.

Up Washington way, Bill and Bunny are still working out the logistics of retirement: what to do, or not to do, next! And, Lee Murray, up Wisconsin way, is looking into indoor flying in Wisconsin.

Mark Nankivil has numerous projects on his new work bench, specially designed so he doesn't get the "Hunchback of Notre Dame" disease working on models, according to Mark.

Tom Nagel's personal computer took a sharp whack with a rubber mallet, and a couple of "Have Sailplane Will Travel!" articles fell out... For those of you dying to share a favorite flying site, contact Tom and he'll help with the editing and write-up.

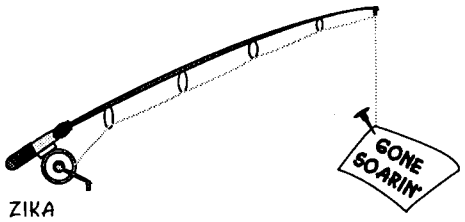
Needless to say, it's been a very busy year for all of us! And 1/3 of the year is left to go!

And, on the same note, we recently received the following from a subscriber up north:

"Don't change anything - *RCSD* is an excellent product - keep up the good work!" Signed, Mark Gervais, Canada.

Thanks, Mark! Now, if we could just have absolutely perfect weather and a few more hours in the day...

Happy Flying!
Judy Slates



R/C *Radio controlled* **SOARING DIGEST**

THE JOURNAL FOR R/C SOARING ENTHUSIASTS

A MONTHLY LOOK INTO THE WORLD OF SAILPLANE ENTHUSIASTS EVERYWHERE

R/C Soaring Digest (RCSD) is a reader-written monthly publication for the R/C sailplane enthusiast. Published since 1984, *RCSD* is dedicated to the sharing of technical and educational information related to R/C soaring.

RCSD encourages new ideas, thereby creating a forum where modelers can exchange concepts and share findings, from theory to practical application. Article topics include design and construction of RC sailplanes, kit reviews, airfoil data, sources of hard to find items, and discussions of various flying techniques, to name just a few. Photos and illustrations are always in abundance.

There are *RCSD* subscribers worldwide.

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Jer's Workbench

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Handy Little Tool

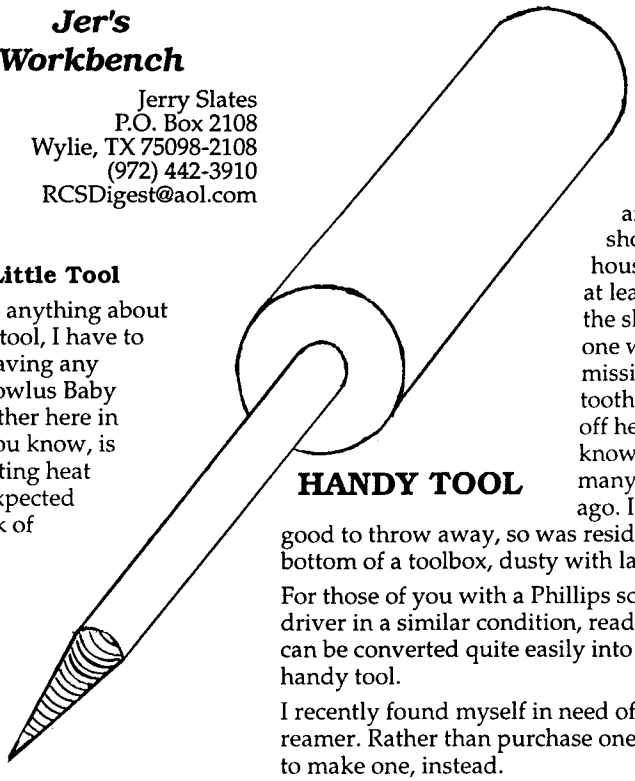
First, before I say anything about my handy little tool, I have to apologize for not having any follow-up on my Bowlus Baby Albatross. The weather here in Texas, as most of you know, is abnormally hot, setting heat records when we expected it to be fall. The lack of rain and wind has made most days almost unbearable.

For those of you building along, I expect to report on my progress next month, as I did get a bit of construction work done in spite of the obstacles.

This month, I would like to share a handy little tool I constructed for odd jobs around the shop.

A Small Reamer

As most of you know, a good, old, trusty Phillips screwdriver is always a necessity around the shop and house. I have at least two in the shop, but one was missing a tooth, broken off heaven knows how, many years ago. It was too good to throw away, so was residing at the bottom of a toolbox, dusty with lack of use.



HANDY TOOL

For those of you with a Phillips screwdriver in a similar condition, read on, as it can be converted quite easily into another handy tool.

I recently found myself in need of a small reamer. Rather than purchase one, I elected to make one, instead.

The Phillips was ground to a point. Once done, I ground a flat side, as shown in figure 1. Then, a cutting edge was ground into the flat side. And, that's it!

While this tool may not be used all that often, it comes in quite handy when scratch building models.

■

FIGURE 1

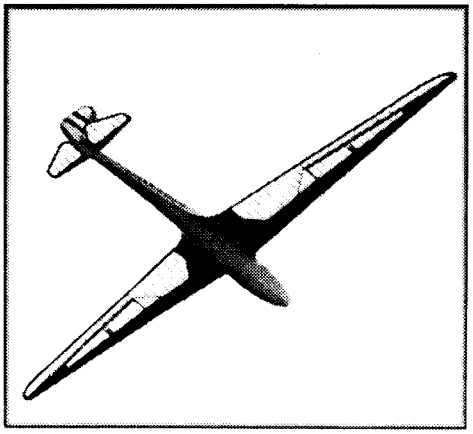
LOOKING AT END OF HANDY TOOL

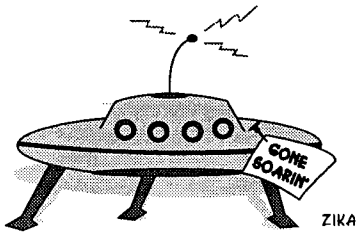
Grind Tool Like This **NOT This!** **OR, This!**

Specs.	ASW-24	PILATUS B-4	LUNAK LF-107	DISCUS (1:3.5)	DG 800 (1:4.5)	NIMBUS 4-D
Wing Span:	64 in.	57 in.	66 in.	168 in.	137/165 in.	130 in.
Length:	28.3 in.	29.5 in.	28 in.	74 in.	62.5 in.	46 in.
Wt:	11 oz. $159.95	10.5 oz. $149.95	15 oz. $159.95	200 oz. $1395.95	123 oz. $999.95	54 oz. $599.95

Robin Lehman
63 East 82nd St.
NYC, NY 10028
(212) 879-1634

Thomas Schmidt with his 1/3 Fafnir, great flying old timer, as seen at Elmira 2000. 6,33m Wingspan, 14,8kg weight, fiberglass fuselage, built up wings and tail covered with "Poletex" semi-transparent white.





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19th ANNUAL LAST FLING OF SUMMER

BLUE SPRINGS SOD FARM, Broken Arrow, Oklahoma
September 15, 16 and 17

Friday, Sept 15th, 2PM:	Class A: Handlaunch	6 Rounds
Saturday, Sept 16th, 9AM:	Class D: Unlimited	6 Rounds
Sunday, Sept 17th, 9AM:	Class B: 2 Meter	4 Rounds

(Expert and Sportsman Class for each Event)

Awards:

1st Place Overall	Trophy For Combined 2m and Unl scores (Flyoff in case of tie)
Handlaunch	1st thru 3rd, 1st place for Sportsman (Certificates and cash awards)
2m and Unlimited	1st thru 5th. 1st place for Sportsman (Certificates and cash awards)

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For additional information, call or e-mail Dave or Jeff. An Adobe printable entry form and further details are available at the TulSoar web site:

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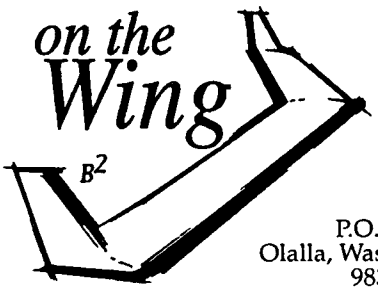

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Boeing ATT "SuperFrog"

A tailless multi-engined military transport from America's premiere aircraft manufacturer is an enticing project in small scale for electric power or in large scale for the slope.

Boeing's ATT (Advanced Theater Transport), nicknamed SuperFrog, was designed in response to the USAF Air Mobility Master Plan. It has a slightly smaller span and length than the C-130 Hercules, and hence a smaller footprint, yet is able to carry two to four times the cargo over a greater range.

The SuperFrog is also a tilt-wing aircraft. The wing rotates during take-off and landing so the engines are oriented in a more vertical direction. The combination of propeller thrust from four 10,000 HP engines and wing lift augmented by the propeller slipstream will enable a fully loaded SuperFrog carrying 30 tons of material to take off and land in less than 600 feet. Landing speed is estimated to be 40 m.p.h.

The forward speed during take off and landing is so low, Boeing engineers determined that a horizontal stabilizer would be ineffective. During cruise, the wing is self-stabilizing through various trim and control surfaces, and a horizontal stabilizer is not required. Because of complex flight control laws, the full size aircraft will incorporate computer based control systems. Eliminating the unnecessary horizontal surface, however, will cut material and production costs, and drag, by 10%. These substantial savings mean a less expensive aircraft with better performance.

There are at least two rivals to the Boeing design. Lockheed Martin's USB (Upper Surface Blowing) utilizes the Coanda effect to improve performance. Artists' renderings show an angular swept wing with a wide root chord, *a la* the B-2, and a V-tail which has the two surfaces separated by an unusually wide aft fuselage. Airbus' entry is designated A400M. It utilizes turboprops on an airframe which is similar in shape to the C-141 and C-5. This aircraft has no short field capability.

A 7% scale model of the SuperFrog has already undergone wind tunnel testing, and a model of the same scale is to begin flight testing some time this year. Maiden flight of the Superfrog is to be before 2010, with deployment in the 2011-2021 regime.

For the modeler, the SuperFrog opens some interesting possibilities — one could construct a large scale model for slope flying or go with electric power.

Bigger flies better, so for slope flying we'd tend toward a span of at least eight feet. At 1/15 scale, the span would be 8.25 feet. Each wing panel would then be well under four feet in length, and the fuselage, though stout (nearly 1.5 feet wide), would be just over 5.4 feet long. Cutting the fuselage in two at a point just behind the wing would allow the model to be transported in a small car.

The alternative, electric power, need not be expensive. Four Speed 400 motors driving four bladed props through in-line gearboxes would very well match a span of say 54 inches or so and a flying weight of 60 ounces. A 9x6 4-blade prop should work well with a Speed 400 7.2 volt motor and a 2:1 gearbox. On fourteen 1700SCR cells, and with the motors wired two parallel/two series, the draw is 10.5 amps per motor. Such a setup would give roughly six minutes of flight time. If all motors are wired in parallel, decrease the cell count to 12. This setup gives much lower flight times.

It should be kept in mind that propellers on the port side should rotate counterclockwise as viewed from the rear, while those on the starboard should rotate clockwise. There is certainly sufficient room in the fuselage for batteries and radio gear! The inventive experimenter could try the tilt-wing concept by rotating the wings using a retract servo for power and the wing rod as an axle.

We heartily encourage any *RCSD* readers tackling either of the two projects we've outlined here to share their experiences.

Special thanks to Carlo Godel and Mark Nankivil for their assistance in gathering information for this article. Carlo, a member of the nurflugel.com e-mail list, was able to take an artist's rendering of the SuperFrog which we e-mailed to him and turn it into a 3-view. Mark helped us determine a suitable powerplant, gearbox, battery and prop combinations for the suggested electric version. Now, if we can just get him to build one...

Ideas and suggestions for future "On the 'Wing..." columns are eagerly anticipated. We can always be contacted at P.O. Box 975, Olalla WA 98359-0975, or through e-mail at <bsquared@halcyon.com>.

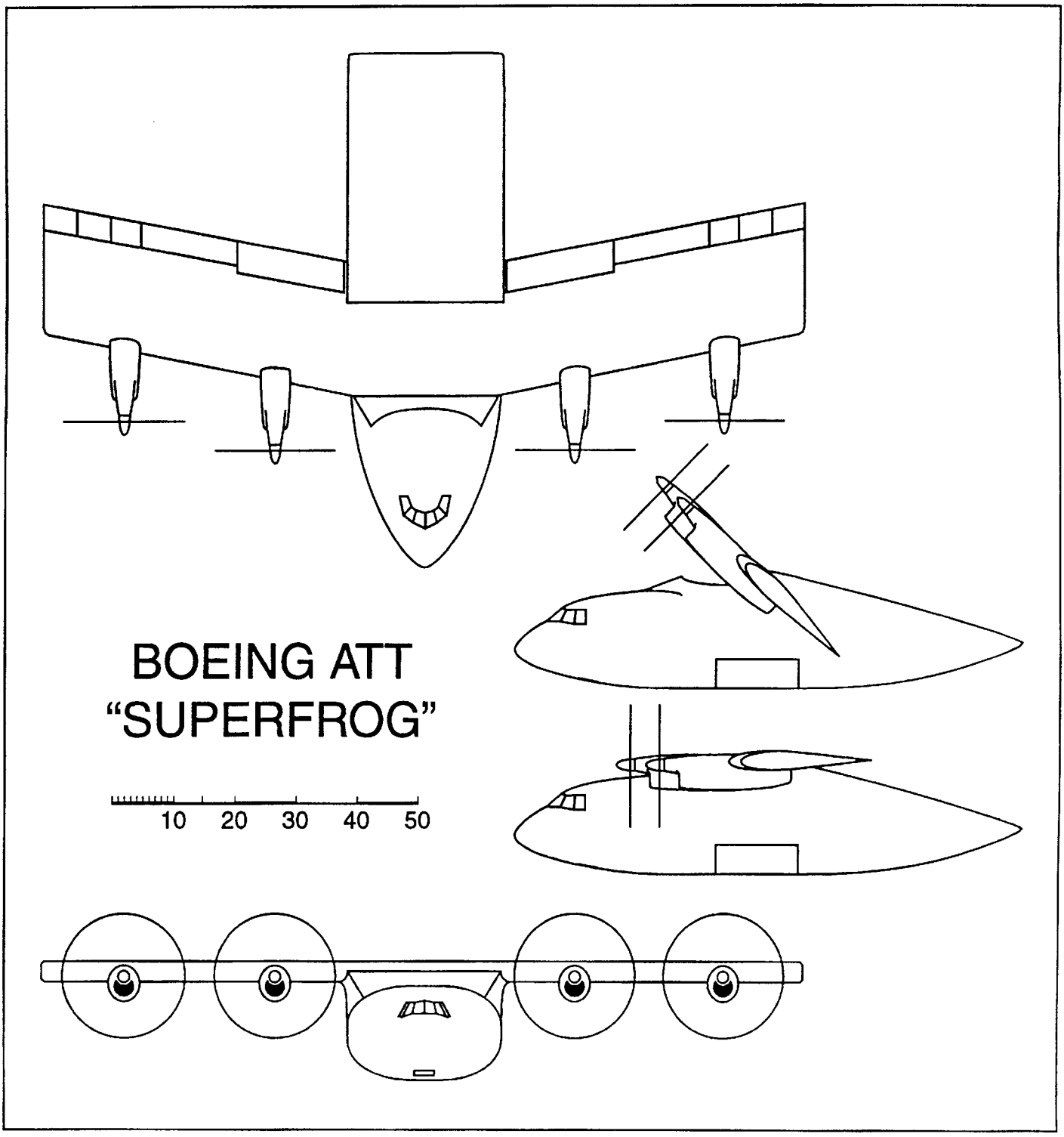
References:

Sweetman, Bill. Load Warriors. *Popular Science*. July 1999, pp. 52-55.

Wilson, J. R. ATT: moving slowly toward shorter landings. *Aerospace America*. February 2000, pp. 22-23.

■

Dimension	Lockheed C-130H "Hercules"	Boeing ATT "SuperFrog"
Span	132.5 ft.	123.8 ft.
Length	97.8 ft.	81.6 ft.
Powerplants	4 x 4,500 HP turboprops	4 x 10,000 HP turboprops
Cruise speed	370 m.p.h. max.	485 m.p.h.
Range	2,365 miles	3,000 miles



TECH TOPICS

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Jeff Govek
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HIGHLANDER 2-METER EPP FOAMIE

One of the few projects that's been slowly underway for the past few months at the Register household is construction of an EPP Foamie. This is the 2M Highlander from MAD Aircraft Design. It started out as a correspondence project with my cousin in New Jersey, but has recently taken on a life of its own.

So, why talk about EPP Foamies in *RCSD*? Although there are many experts that use this construction method, I hadn't built one yet, so it might be useful to have a fresh look by the uninitiated. At the same time, a new flier in our club was building the same ship, so comparing notes really helped in the construction process.

A couple of EPP planes have shown up from time to time at the TulSoar flying field. (Daryl Reimer's 1-26 was the first I remember.) Sometimes they look pretty homely. Sometimes they haven't flown really great. But one thing's for sure; they're almost totally crash proof. And these days, a couple of us could use that!

Jeff Govek's Highlander (new pilot and club member) placed 1st in Sportsman at our July club contest, so the EPP format is competition capable. Heck, Joe Wurts beat us all at Pasadena two years ago with a 2M EPP Foamie he slapped together the night before!

So, when the MAD Highlander came out a year or so back, it looked like a good one to try and I ordered a couple. After a first set of notes showed up in our newsletter, Jeff supplied a number of very helpful hints from his experience, so we're co-authoring this month's column.

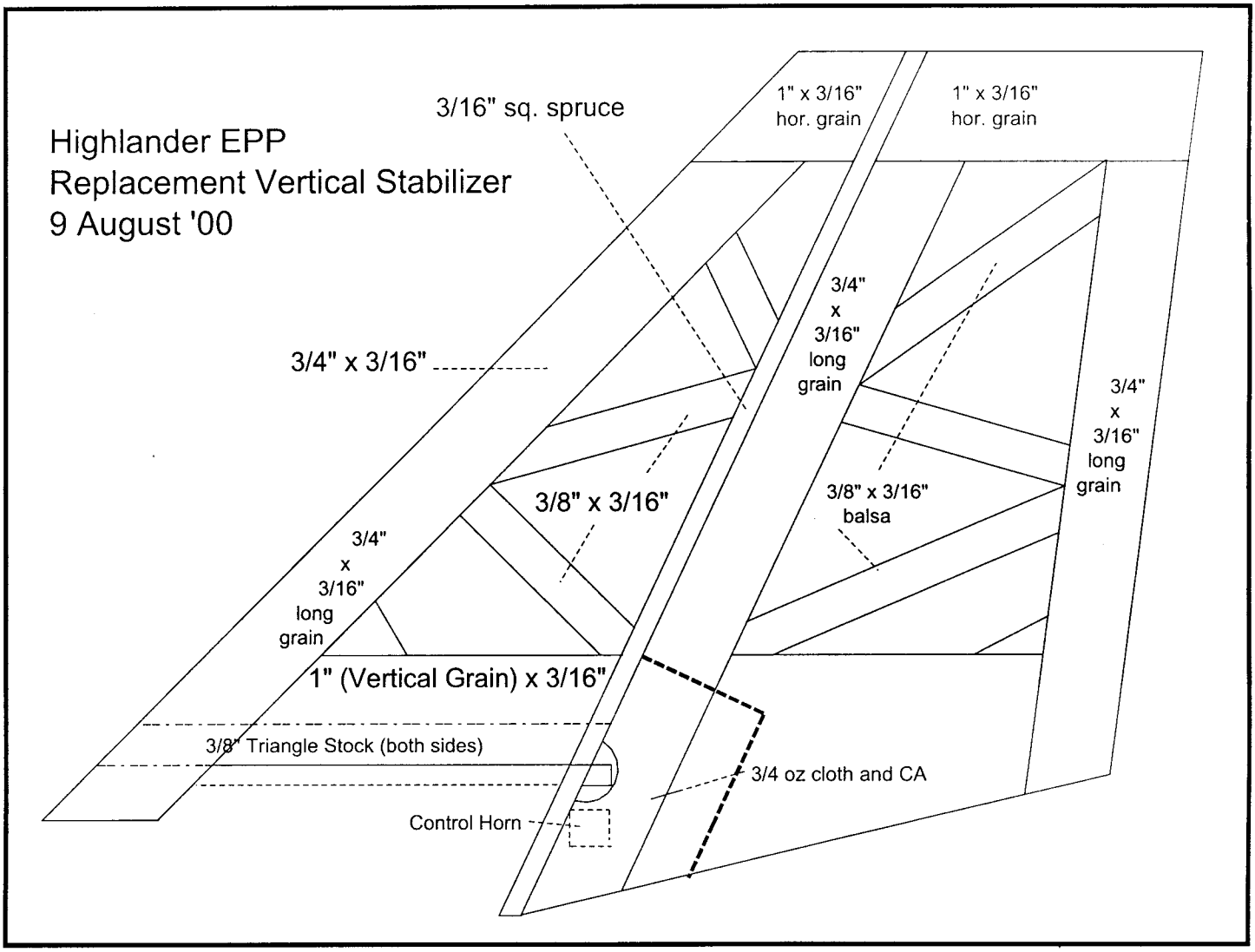
Dave: First impression of the Highlander was very low parts count and pretty good foam cutting on the fuselage and wings. Proportions looked good and all the parts seemed to be there. There was a slight misalignment of the spar grooves on one wing, but not enough to worry about. Spar slots were really tight for the spars provided.

Jeff: Out of the box, the only piece that was noticeably flawed was the fuse. The nose was not cut symmetrically. The rest was fine. (The wing spars did take some effort to install.)

Dave: Although construction looked simple, the learning curve was steep. EPP foam (expanded polypropylene) is wonderfully tough material, but it's different from the standard foam (polystyrene) we use for wings and some different approaches need to be used.

First thing you learn is that not much of anything sticks to this stuff. So how do you glue spars, etc., together?

The manual suggests hot glue or Household GOOP, so I got a hot glue gun and tried it. Nope, don't like it. Doesn't really wet the surfaces very well and sets up a bit



brittle. This is a flexible foam construction and anything with a real stiff glue bond is bound to break. (Epoxy, CA, Titebond all fall into this same category.)

Silicones looked good but they don't grab very well either. Tom Tapp had suggested GOOP also for a different application (sticking a polyethylene skid on a glass nose cone) so we tried that.

Voila! The adhesive of choice for EPP. It's also the adhesive of choice for getting stuck to your fingers, eyebrows and other body parts. (***Hint:*** Don't scratch ANYTHING until this stuff has set a few minutes.)

With that problem solved, parts started going together pretty quick. Since GOOP takes about 24 hours to fully cure, it makes for a nice leisurely building pace. Stick a spar in one night. Sand it down and stick in another one the next night, etc.

Before too much longer, a wing had emerged (polyhedral version). Now how do you round off that leading edge to make an airfoil shape?

We had some 320 grit paper on the sanding Tee and tried that. Then tried it some more. Then some more. And some more still. As noted, polystyrene foam this stuff ain't. So we took out the vibrating sander and some manly 40 grit and went at it.

Now this worked great - up to a point. While enthusiastically working on one of the center cores, we got a little carried away and gouged about a 0.5" dent in the leading edge - very ugly.

Repair technique was very simple - cut out a block of the foam around the damage, and GOOP in an oversized block from the scrap in the kit. Sand down to shape the next night. What could be easier!

The fuselage construction is pretty straightforward in principle but turned out to be the hardest part. You have to cut out the wells in the foam for all the pieces. (See the close up of the fuselage nose area where the battery, servo, pushrod and tow hook plate cut-outs have been made.) The problem here is that you need to cut all the way through the fuselage for the size you want, then trim the edges of the resulting plug to glue back in around the part.

Best tool I found for this was a hacksaw blade filed to a point and then sharpened on the side opposite the teeth to a sharp cutting edge. That way it penetrates through with the cutting side but can be used to saw out the blocks once you're all the way through.

Jeff and I found the same problem on the servo mounts. At first I'd hoped that a snug fit on the servos would be sufficient. Nope. Too wobbly. You've got to glue those in place as well. Jeff wrapped the servos in masking tape so that they wouldn't be glued directly to the servo case. ***Jeff's suggestion:*** build little balsa boxes around the servo and then glue those into the fuse. Too late for me on the servos, but I did use Jeff's suggestion for the top hatch radio compartment.

The pushrods are a 'Nyrod' style. I used a router bit and my Dremel to cut the slot down the sides for the pushrods. Once the servos are in place, it's real easy to line things up and then just cut the channel. A soldering iron would work but depth control gets to be a bit hard. Please note that if you use a Dremel router to dig deeper than about a quarter of an inch, you'll wind up melting the foam and making a hard, black mess in the channel and on the router bit.

GOOPing the pushrods in place definitely solved one problem. The side to side play in the tail boom was eliminated. There was

still a lot of up and down play in the tail boom. Since I was going to re-design the tail, I set up the pushrods as a straight shot to the control surfaces (no Z-bend).

Jeff: On control rod routing, I initially routed the control rod for the rudder as shown in the instructions. (Exit the fuse on the side and then make a Z shaped bend up to the rudder control horn.) Didn't work. No stability. Lots of rudder play. Thing flapped like a humming bird on its first winch launch. I relocated the control rod so that it now exits the top of the fuse ahead of the vertical stab and goes directly back to the rudder control horn. Much better. Works like a champ. (Which reminds me, I still need to re-cover that area.)

Keeping the tail boom straight was a real challenge. Jeff Naber (former TulSoar President and CD) said he was planning on driving a carbon shaft down the boom for stiffness. If I were to do another Highlander, I think I'd do the same.

Dave: Fortunately, I got this news from Jeff BEFORE completing my Highlander and routed a slot in the bottom of the fuselage for a 1/8" x 3/8" spruce brace. Again the 1/8" router bit came in handy, but this was too deep for the heat and resulted in that rarest of gastronomic delicacies 'blackened Highlander tail'. I'd recommend the soldering iron for this move.

However, with the spruce brace running from about the TE of the wing to the end of the fuselage, and a generous batch of GOOP to tie it together, the vertical flex was completely eliminated. The suggestion that Jeff Naber made would probably be a good one as well. For anyone building a Highlander, this modification really makes later covering and alignment a lot easier.

All the wiring was run in little slots on the foam up to the radio compartment. This compartment was lined with wood so the switch and a hatch cover could be set up for easy access as per Jeff's suggestion.

So now it's back to the wing. Although it's got really beefy spars, the poly wing is more flexible than I thought it should be. Covering technique says to spray with 3M-77 adhesive and then use a bunch of strapping tape. Boy was that a mess!

First step is to spray the spar regions and the joint for the trailing edge piece (1" TE stock glued to the foam). Then run 1 inch or 2 inch strapping tape in various places. Wrap up the whole deal by spraying the leading edge and using 2" strapping tape there as well.

Sounds good. And when it was finally done, it really stiffened up the wing so that's in good shape. But getting there was really interesting.

Think about it for a bit. You've just sprayed some large sections of a 2M (one piece) wing with 3M-77. Anyone that's worked with this stuff knows it's a great contact cement and stays tacky for awhile. So how do you put the wing down on any surface so you can stretch out the tape (don't want a lot of wrinkles here) without it sticking to that surface?

About halfway through this part of the adventure, various curses came to mind as yet another wad of hair was removed from my leg and joined forever with the lower surface of the wing. (Depilation is a much sought after procedure among women. So I might suggest you ask your better half to assist with this part of the construction.)

Jeff: I think my wings turned out rather nicely for a rank beginner (unlike my fuselage). Anyway, for the underside, I set the wing upside down on the floor with a small box under the center joint with the wing tips on the floor. This gave me a somewhat stable platform for taping the underside. After I sprayed the 3M-77, I let it dry for a minute or two before applying the tape (otherwise the tape would slide around). For the leading edge I simply set the wing on the trailing edge and let the polyhedral shape keep it stable.

The trailing edge was tricky. I just sat in an armless chair and set the wing on its leading edge in my lap after I had sprayed it (wear old clothes). Make sure there are no wrinkles in the tape. These will cause covering problems later. For the covering, I did it in four sections: right side bottom, left side bottom, right side top, left side top. I sprayed the section I was covering with 3M-77 and let it dry for about 5 minutes. This left the wing tacky and the covering seemed to go on better. I applied the covering (Ultracote) with an iron set on medium. The biggest problem I had was at the transition points on the top side of the wing. I had/have a real problem keeping the covering from lifting at those points.

Dave: After getting Jeff's advice, my Highlander wing was completed the same way. After ironing the covering on all surfaces, there were some irregularities and tape lines showing. Next step was to hit the wing with a heat gun. You need to do this carefully and get almost to the melting point of the film. At that point, both the film AND the tape underneath shrink enough that virtually all the wrinkles were pulled out. Since you've got to do the wash-out anyway, this technique works well for both the incidence change at the tip and the smoothness of the surface. Use a cotton glove to rub the covering back down on the wing surface so the adhesive will grab well.

To fix the covering at the poly joints, I wrapped each joint (LE to TE and back around) with 1 inch wide, white vinyl tape. (The tough stuff you use for taping the root joints on your open class ships.) To keep the LE seam from coming loose, as well as for visibility, the LE is wrapped with prismatic tape. The width here needs to be about 1.5 inches to get a good grab on the top and bottom covering.

Jeff: For the wing pin alignment, I drilled the hole for the pin in both alignment blocks (fuse and wing). I then inserted the fuse wing alignment block into the fuse. Then I cut a hole in the EPP of the wing saddle to match up with the hole in the fuse block. Next, I glued the pin into the block in the wing with just a little GOOP (after the block was glued into the wing). I used just enough to hold it in place while it sets. I then attached the wing to the fuse and let the glue dry. The next day, I removed the wing and added more GOOP for strength.

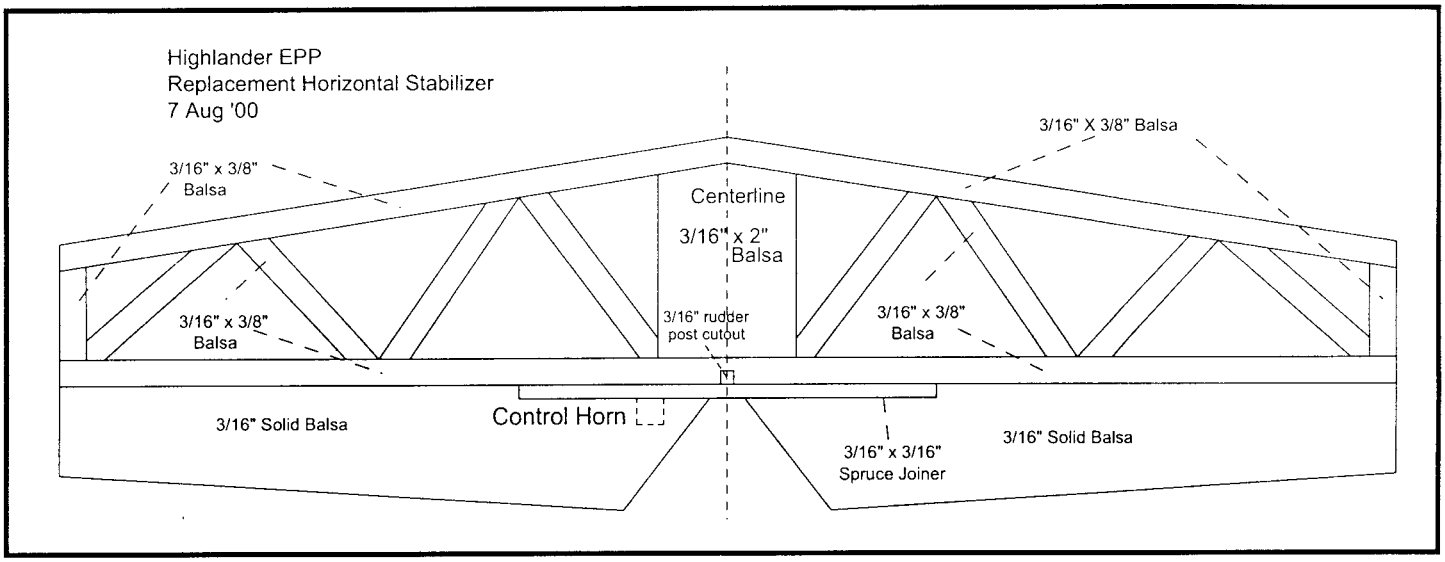
In hindsight I would have used epoxy. After a couple crashes, the block in the wing had pretty much disintegrated. Several repairs later, it is now a 50/50 mix of balsa and epoxy. I think spruce or basswood might be stronger, but that might shift the stress to the pin and result in the pin breaking. The block has since partially broken loose from the EPP in the wing.

Dave: To complete the fuselage covering, I followed Jeff's advice for the wing and did a side at a time. This worked pretty well. As with all iron on coverings, you need to grab and stretch as you go around compound curves. After all the covering was on, it looked a bit like a white prune with all the wrinkles underneath. As with the wing, hitting it with a heat gun right on the edge of melting the covering wound up shrinking everything very tight and much smoother than I had thought it could be.

Jeff: I used the plastic tails. I decided on using them for the ruggedness. I've cartwheeled my plane more than once on landing with no damage to the tails. I think balsa tails would have been destroyed. However, the plastic tails are not very stiff. I have quite a bit of flex in the tail. Some of the flex is due to the lack of stiffness in the EPP. I guess the flex is a trade off, durability vs. stiffness. Looking back, I think I would have tried balsa core fiberglass tails. I don't have any experience with glass, but my thought was that they would be both stiff and durable. However, I wasn't sure about weight and strength of glass tails. My other thought was to build a balsa mounting system for the plastic vertical stab/rudder.

Dave: Although the coreplast looked like it could do the job, I didn't like the weight and the flex. So off to the CAD program to draw up a new set of tails from balsa. Scale drawings are shown with this article. If you'd like an Adobe Acrobat file that will print to correct scale on your printer, please send me an e-mail (regdave@aol.com) and I'll send them along ASAP. They're set up to either print on an 8.5 x 22 inch page (use two pieces of fan-fold in your printer) or two 8.5 x 11 inch with alignment marks to tape them together.

Jeff: Once I finished the plane, I cut a slit



through the covering and the EPP in the nose just ahead of the battery. This is where the lead nose weight now resides. I pushed (crammed?) a couple of lead disks into the slit and then taped over the slit with strapping tape. This seemed to work pretty well. However, on one particularly amazing crash, I flew the plane nose first straight into the ground from about 25 ft. When the EPP compressed, the disks (which don't compress) were shoved right through the strapping tape and were on the ground next to the plane. After I reinserted the weight, I checked the wing alignment, then checked the servo operation and re-launched. So, now my plane has a random assortment of tape on the nose. (The weight has stayed put since.)

Dave: With the balsa tail, the CG came out smack on the money so there's no nose-weight in mine. All up weight is 32 oz. which is a tad light for the conditions in our area. A soon-to-be-made modification is a pocket under the wing saddle for lead ballast.

Flying the Highlander

Jeff and I haven't hooked up yet for a flying session. He did pretty well at a contest I couldn't make and I flew mine the next month at a contest he couldn't make.

After finishing up this ship the night before a club contest, it had to go out for some tossing just to check it out. Off to the local school yard for some throwing in the gloaming. First toss required a titch of left and up trims. Part of the problem was 1 inch less tip elevation on one wing. This came from getting too enthusiastic with the heat gun. That differential has been ironed out and the left trim offset is now gone.

Next toss was true with plenty of altitude for a nice turn. After that, it was about 30 tosses or so with a loop in every other one and hand catches for the majority. A really sweet ship to fly!

Next day at the contest we had the first winch launch. It went up super with a reasonable zoom at the top. After the euphoria of the first couple of launches wore off, it seemed like the early launch rotation was struggling a bit, so the tow hook was moved back 0.5 inch. It's now 0.5 inch ahead of the CG. 'Gorilla' launches just didn't seem to phase this plane. Almost no wing flex even with a pretty stout stomp on the peddle!

Flying was VERY easy. This is a no-sweat plane to fly. Makes you realize how relaxing the simplicity of RE flying can really be. Although I didn't cover myself with glory at this event, by the last two rounds we were maxing out. It's kind of fun to be up there zooming around with a kilobuck glass slipper and yelling at the top of your lungs, "Only $86.95 including shipping!"

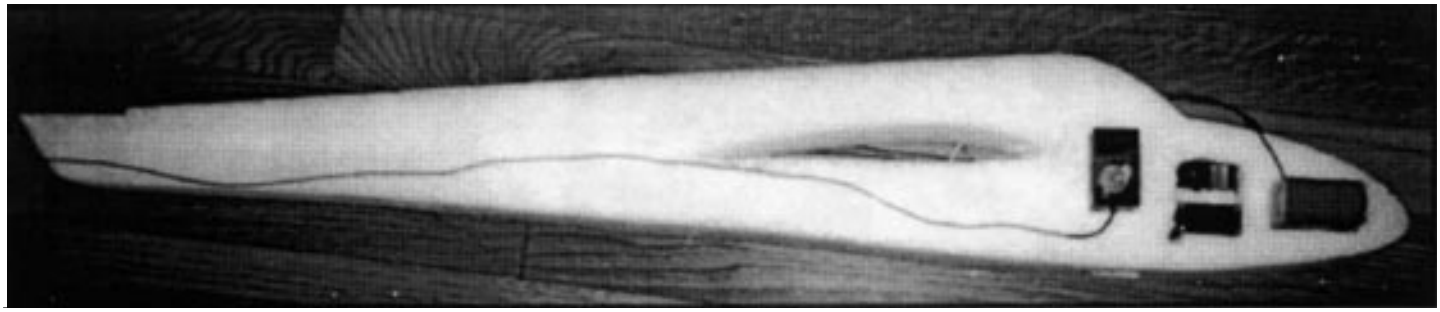
One drawback for windy weather has already been noted. The relatively high lift airfoil does not penetrate well in our Oklahoma breezes. We were running a pretty typical 10-15 mph breeze that day and you had to drift with the thermals. Even specked-out it was a little tough getting back. So ballast would be a must for our area of the country. I had the same problem with Troy Lawicki's Duck with the 3021 airfoil. About 10 oz. of lead addressed the issue quite nicely. Same solution should work here as well.

Another drawback - it doesn't fly inverted all that well. It needs a lot of elevator throw if you're going to try and 'showboat' a bit at the field. Barrel rolls are pretty good if you get a decent dive going first.

Well, that's the news from a couple of Okies who did the experiment. Hope some of the hints are helpful. This is a great little 2-meter sailplane. Very forgiving and very relaxing to fly. (Part of which is not worrying about the occasional crashes!)

If you need the full size drawings for the balsa tail, drop me a line. Thanks to Jeff Govek for his many helpful suggestions which made my building and flying adventure more enjoyable.

■



1-26 fuselage with electronics installed. Taken with U-2 spy camera.

Kit Review

DAW 1-26 CONSTRUCTION REVIEW

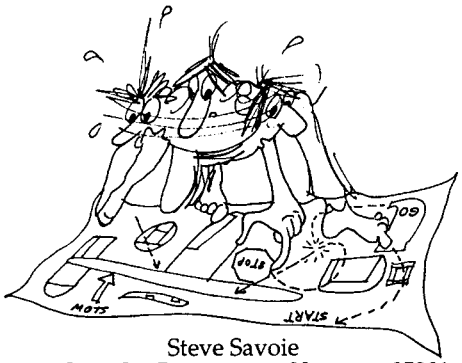
"I gotta get one of these," were the words out on my mouth after flying Dave Garwood's DAW 1-26, 2 meter foamie at a local slope site a few months back.

The day started off with light inland lift which carried this 71" semi scale foamie to reasonable heights. The winds increased as the day progressed and so did the performance of this compact little plane. Rich Loud will be submitting a flying review of this plane after the upcoming SOAR UTAH event over Labor Day. For myself, this article will focus on the construction and modification of the 1-26.

First off, the kit is shipped in a sturdy 4.5" x 12" x 36.5" box, which can be used to transport the plane when built in a 2 piece wing, removable stab configuration. The plane is originally designed as a 1 piece wing (71") with a fixed stab and vertical fin. This kit is a typical Sander's foamie, simple in design, construction, and provided with a complete set of hardware. Dave's documentation is excellent, full size views of detailed sections, and wing tip templates, with very detailed taping instructions and illustrations. This is my second foamie, so I'll back up a bit.

Slope foamies are constructed from EPP (expanded polypropylene) foam that are selectively reinforced with spruce/ plywood and filament tape. Most all electronics are buried in the fuselage,

"SHORT CUTS"



Steve Savoie
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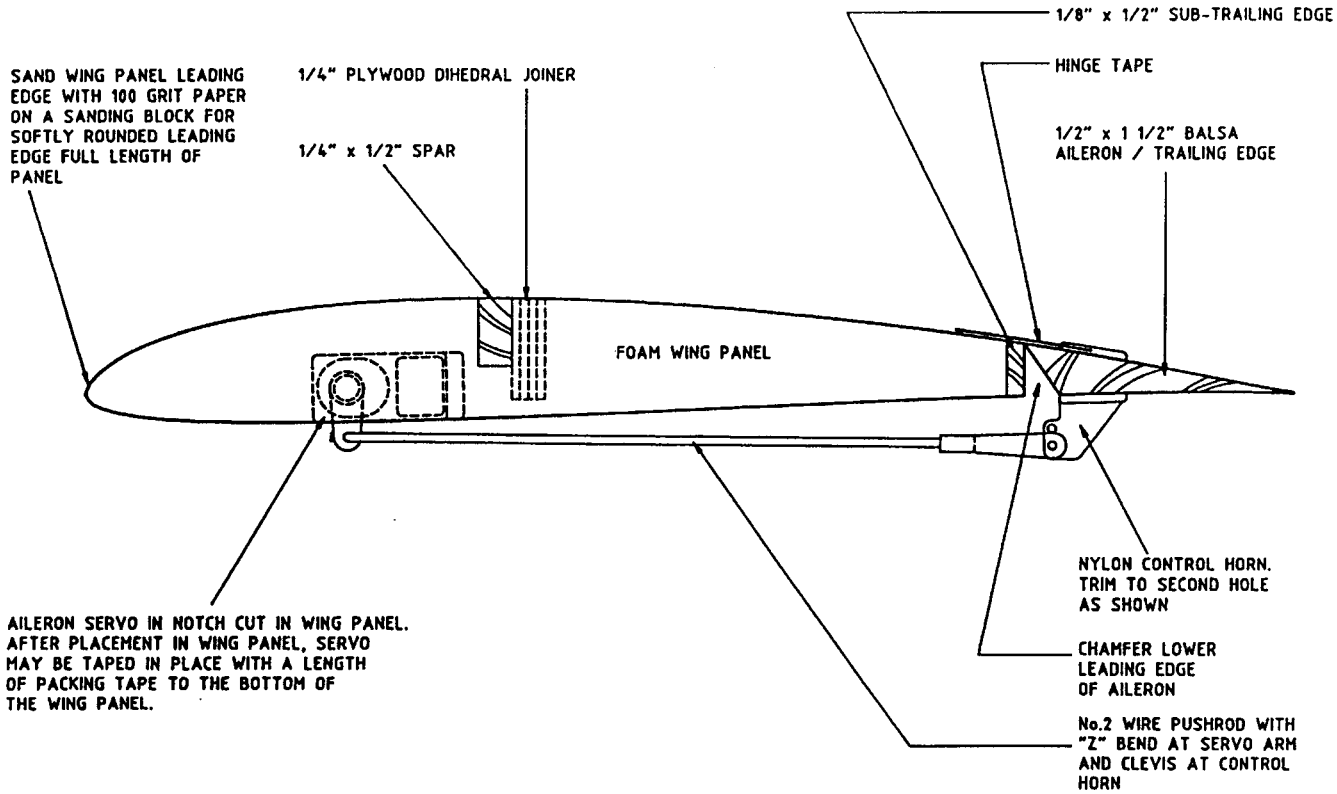

WING SECTION AT AILERON

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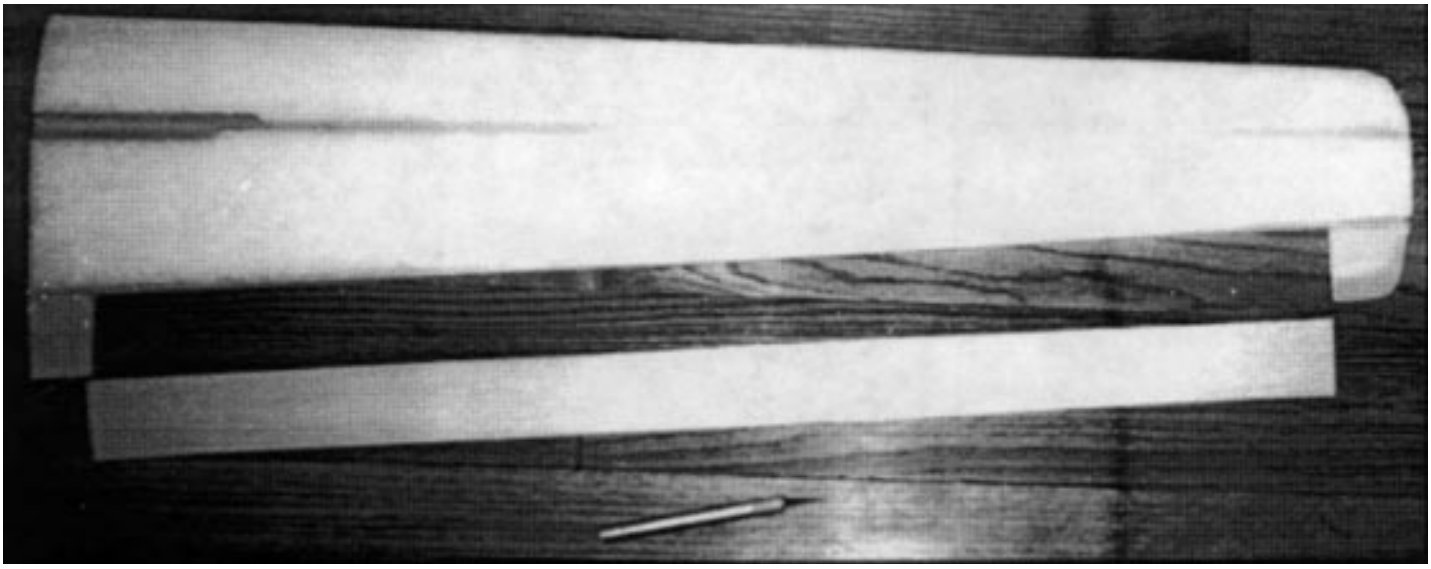
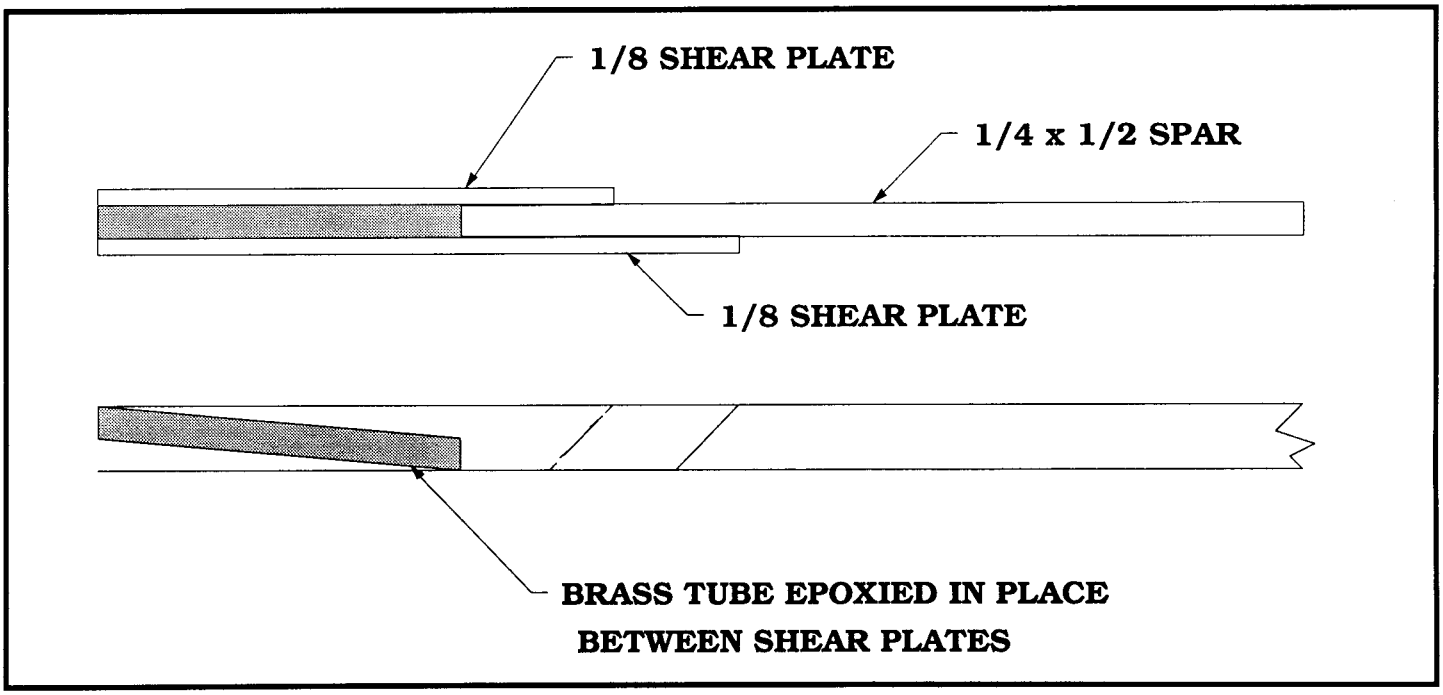
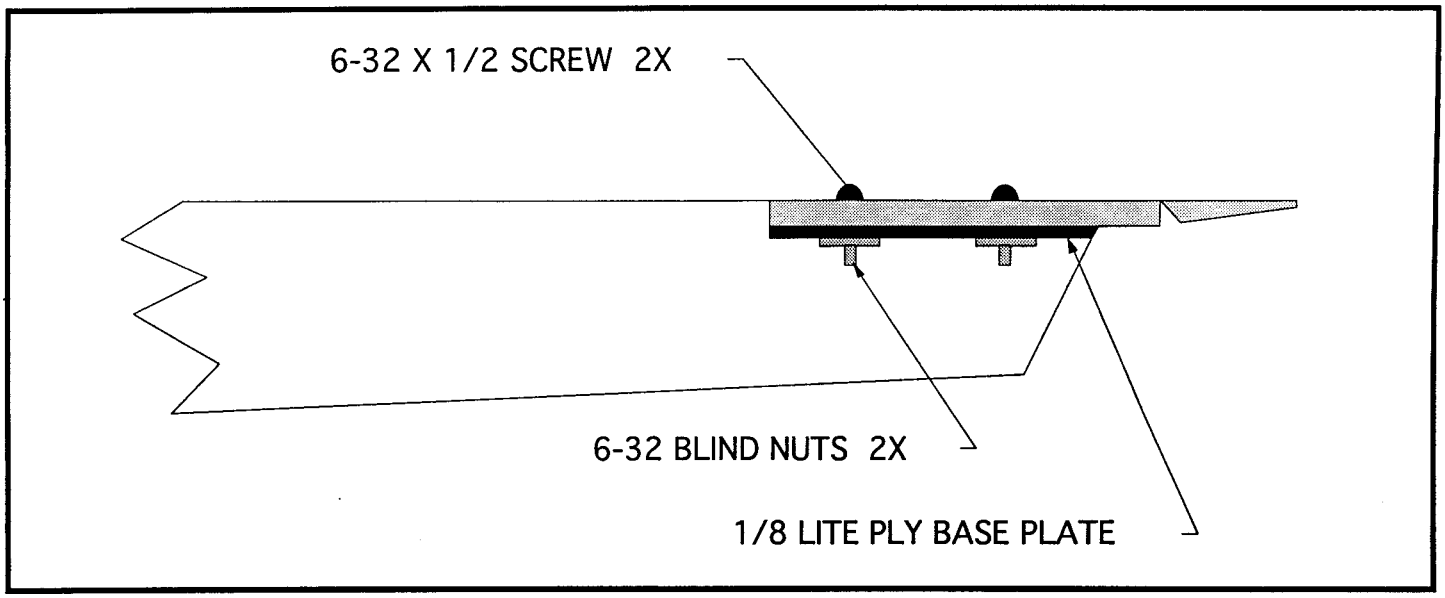


1-26 right wing panel before tape.





GREAT PLANE!!!!!!!!!!!!!

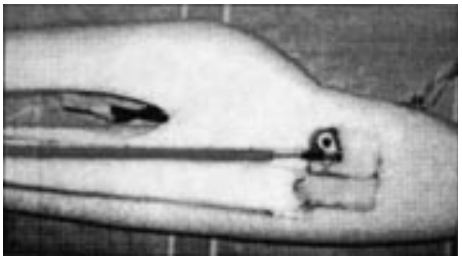
I took the 1-26 out Sunday, did a hand toss off a 10' hill, and it flew straight and true. The next toss was to get it up to about 20'. Instead, I hit a bump 50' out front and circled to about 75' altitude, played around with the rudder, and landed on spoilerons after 3 minutes. I don't know whether the undercamber I sanded into the ailerons and the gaps seal helped but, wow! I later went to Petersburg Pass, a 900' saddleback bowl, and had a great 25 minute flight. Landing was great. Total weight without ballast in the nose (balanced out on the mark per the instructions) is 34.85 oz. This plane's a keeper!

Dave Sanders has a great web site that anyone building a foamie should consult. It has great construction tips, equipment suggestions, etc.:

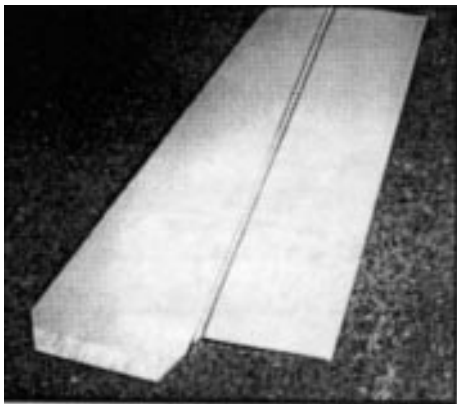
http://www.davesaircraftworks.com

See ya in UTAH!

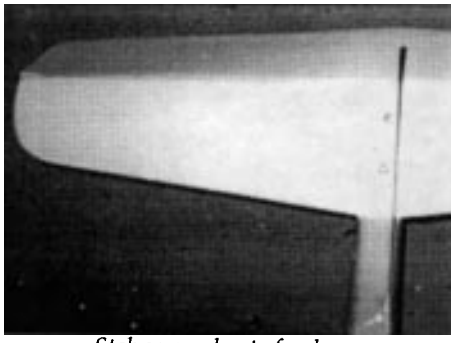
■



Servo detail, elevator.

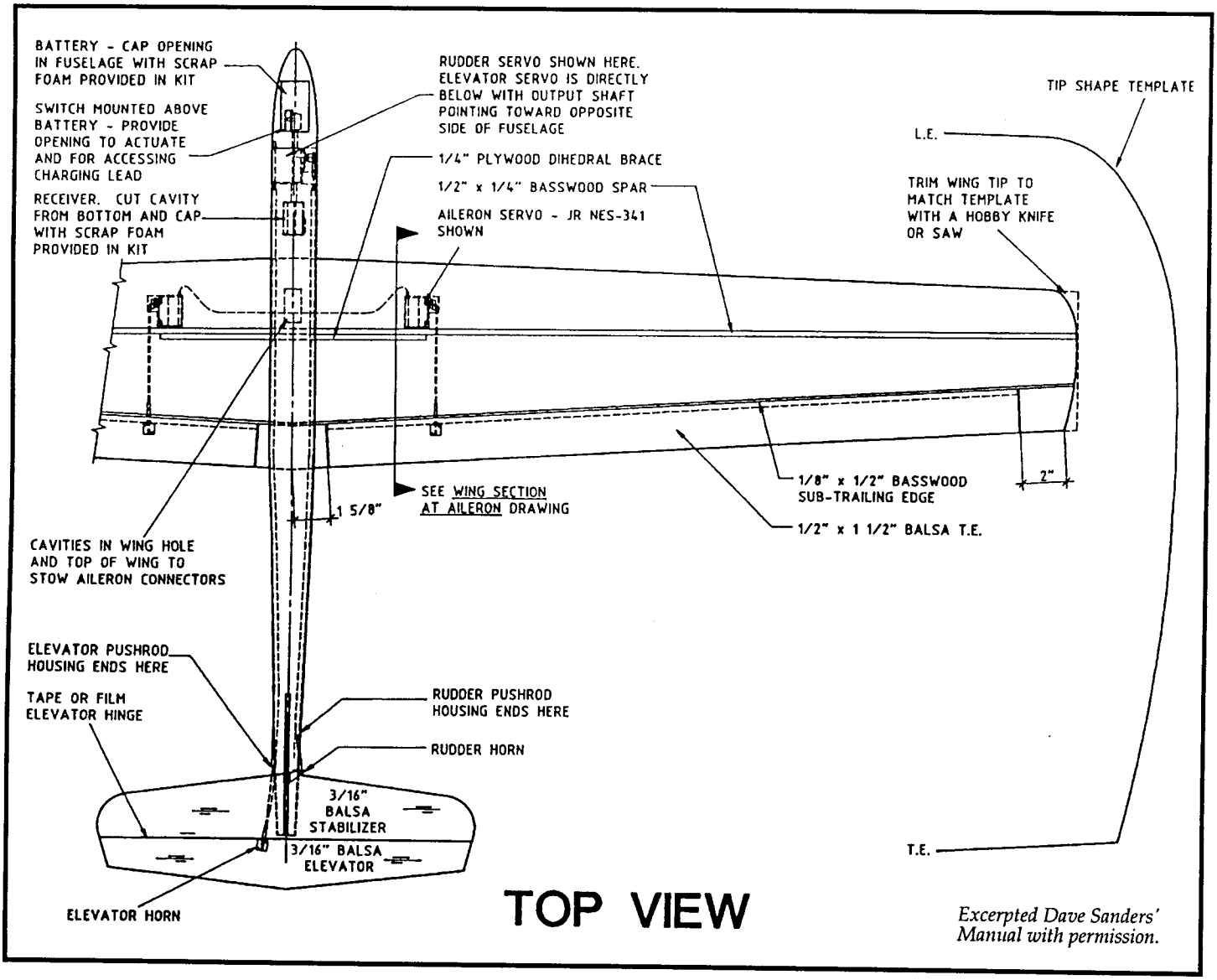


Vertical fin/rudder. Monocote style hinge.



Stab screwed onto fuselage.

Elevator/stab base plate.



TOP VIEW

Excerpted Dave Sanders' Manual with permission.

surrounded by foam and taped up with filament tape. This type of construction is a bit unorthodox, but so is the survivability of these aircraft; they take a beating and keep on ticking. So plan on installing a cheap, simple receiver, a new 800 mAh battery and standard servos in the fuselage, because they will be there for the life of the plane, no musical receivers here. So, now off to the kit.

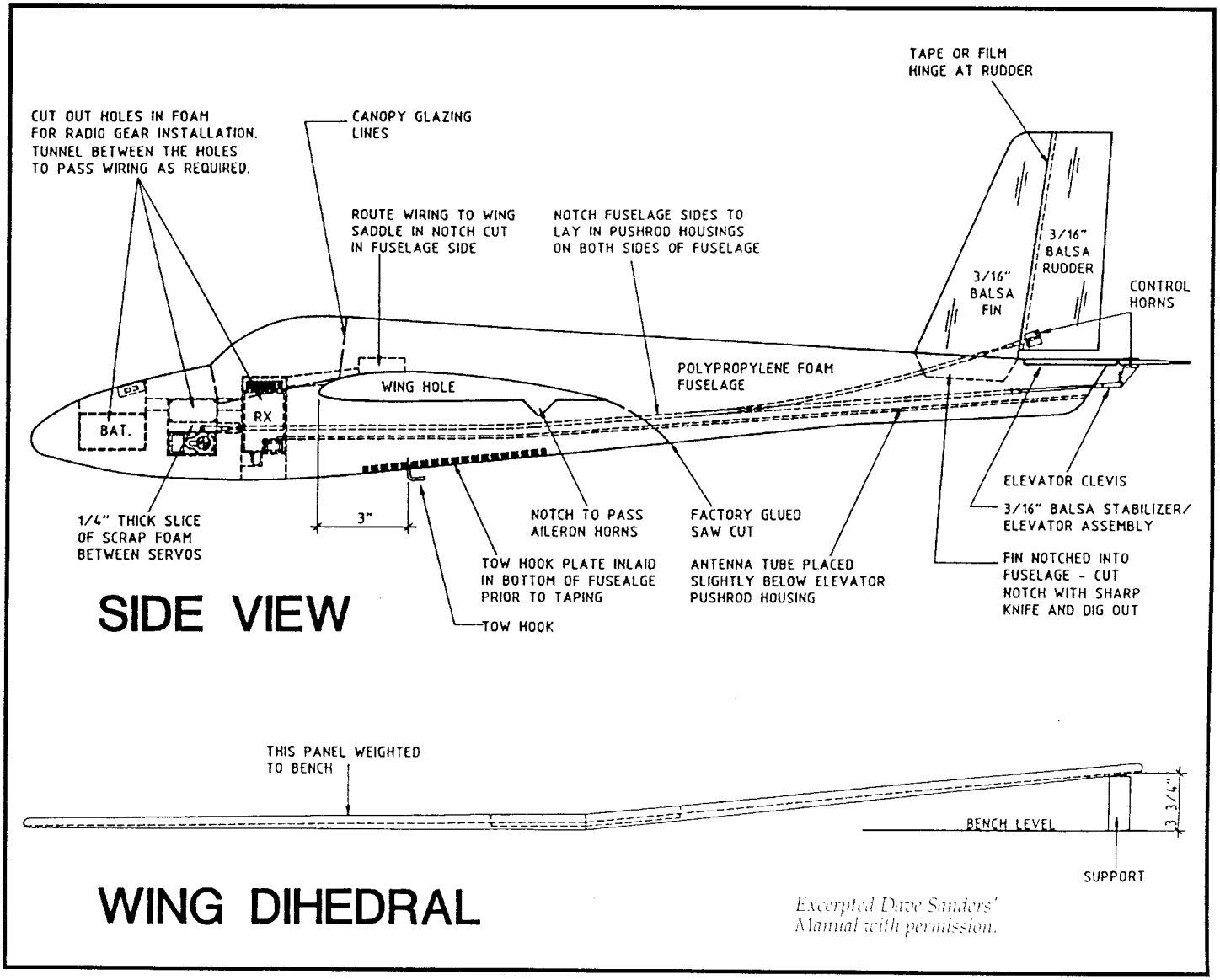
Dave starts you off installing the vertical spars (1/4" x 1/2") in the preslotted SD7037 core and sub-trailing edge stock. Recommended adhesives are household goop, hot glue, and a few other common products found in your local hardware supply house. My spars were modified for a 2 piece wing design. They were slotted and fitted with receiver tubes to accept 1/4" carbon fiber wing rods. They were then capped with side shear caps with offset 45 degree end cut; see illustration provided. The standard 1 piece wing has a very stout plywood brace that connects directly to the spars; then the entire center section is glassed over. The leading edges are sanded over to profile and the balsa trailing edges are lightly glued into position to allow for shaping to the core thickness and profile. This is a neat trick and it really worked out well. I diverted from the directions and made a sanding block to replicate the underside undercamber of the SD7037 and went to work sanding. The next step was to cut the ailerons free and shape the hinge detail, single bottom side bevel.

The last step for the wings was to glass over the trailing edge stock at the wing root area (top and bottom) and the bottom side tips. (This did vary from the kit design at the tips, though the 1 piece wing is glassed at the roots, effectively providing the same reinforcement that I did.) Channels were cut into the cores for the servo leads and pockets were cut for the servos (HS-81). The only remaining step was to shoot the wings with 3M-77 and wrap with filament tape and cover. Unlike my DAW P-51, not all wing surfaces are wrapped in tape, I presume to keep the weight low.

The fuse was straight forward: cut slots for control tubes and antenna sleeve, cut recesses for the rudder/elevator servos (std size), receiver, and battery as well, and connecting channels to run the servo leads into the receiver. I used a 800 mAh pack, which was a bit snug and left very little side wall of foam on the fuselage walls, so I really socked the goop into the cavity to bond everything up tight. This may create problems if the battery life exceeds that of the airframe. I did find it challenging to cut the channels between the servos, battery, and receiver, so it's best to just take your time and follow the directions.

The builder will also need 2 six inch aileron extension leads to tie the aileron servos to the receiver. Dave cuts a cavity into the mid body of the fuse to accept the wing; see pictures. In this same cavity is a cut out notch, so the control horns can pass through. I decided to cap this over (advice from Dave Garwood) with the space block of foam provided with the kit since I'll be building the 2 piece wing version and will not need the clearance slots.

My next task was to insert a 1/8" lite ply base plate fitted with 2 8-32 blind nuts into the horizontal stab contact face on the fuselage. To do this I had to carefully remove 1/8" of foam so as not to raise the



Excerpted Dave Sanders' Manual with permission.

position of the stab. Prior to this step, I did shape the 1/8" balsa stab, bolted it to the base plate, and bonded the base plate into position with hot glue. The vertical fin, rudder, and elevator are similarly made from balsa stock, and required only the leading and trailing edges shaped to profile. Dave used balsa to take the higher loads associated with tow hook launches and high flying speeds. Dave also supplied a plywood insert that's bonded into the base of the fuselage for a tow hook installation.

At this point, the fuselage is spayed with 3M-77 and wrapped with filament tape (2 rolls [10 yards each] needed, as well as 2 rolls of covering). With the wings and fuselage covered, the remaining work was to slot the fuselage to accept the vertical fin and bond it in, then connect all control linkages as balance off the plane. Of course, the wings need to be tweaked with a heat gun to set the proper amount of washout. I got lucky and got the balance right on the money and no additional weight was needed in the nose; must have been that 800 mAh battery.

I'll leave the flying summary to Rich and just focus on the kit. In general, I found the quality of the kit components excellent, the directions were very thorough, extremely well illustrated and leave nothing to chance. The 2 piece/removable stab is ideal for those out of state trips when you need to check this plane onto a flight or take use of UPS services. The best part is that the completed plane will fit back into the original kit box. This is my second foamie so the construction details were not exactly foreign to me, but by no means does this kit require foamie construction experience. I would recommend this kit to any flyer wanting the durability of EPP and the dexterity of a small, maneuverable, light weight sloper that looks scale in the air.

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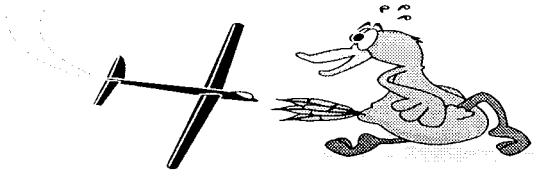

ZIKA

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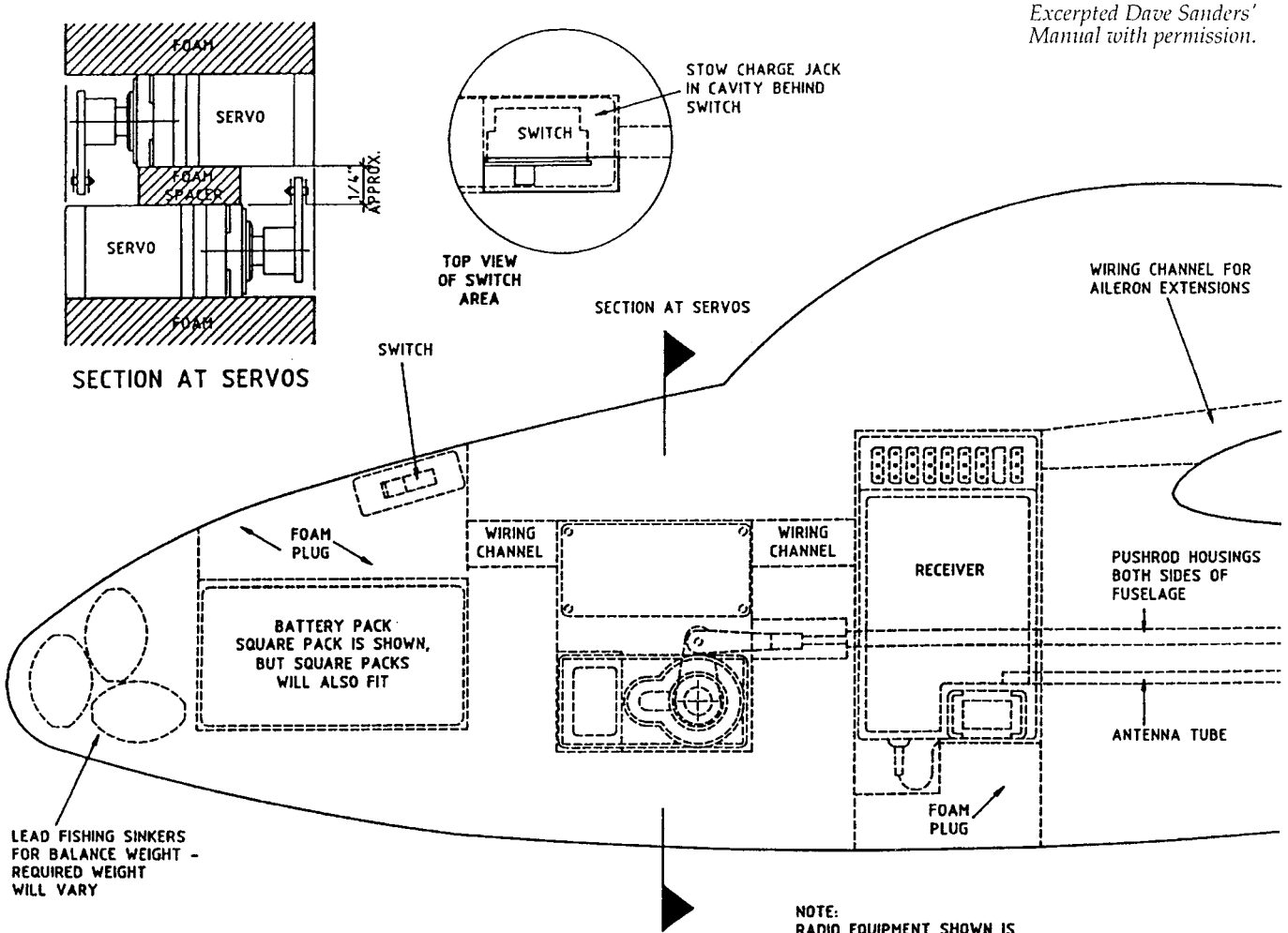
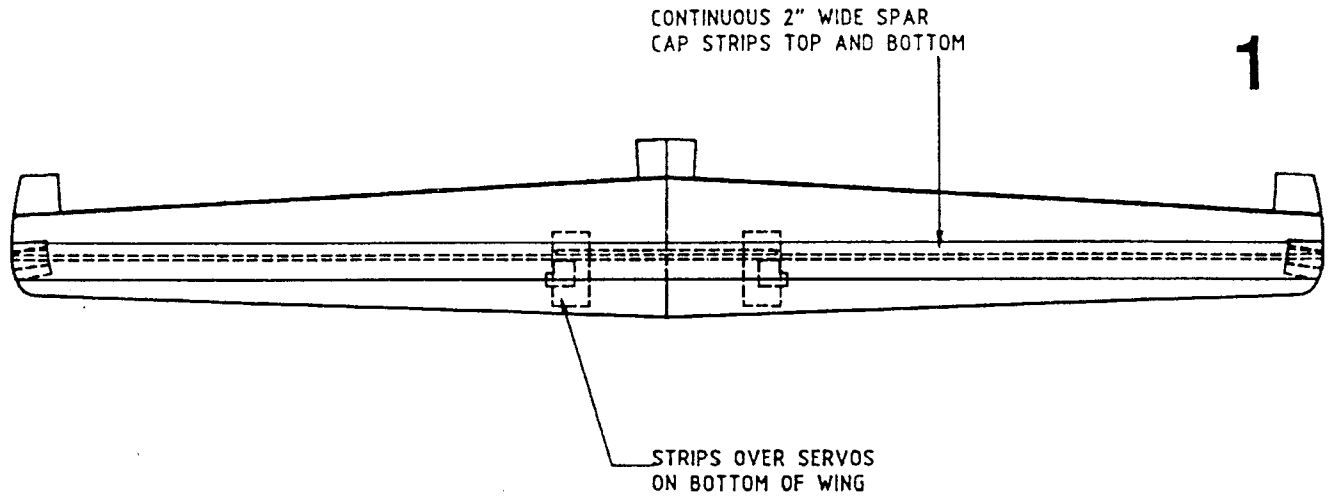
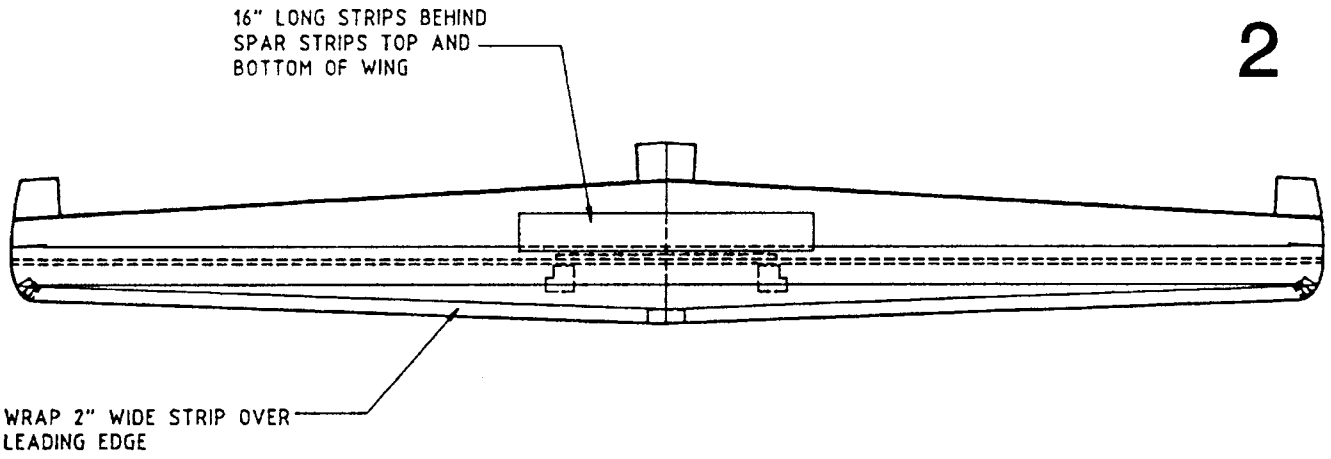
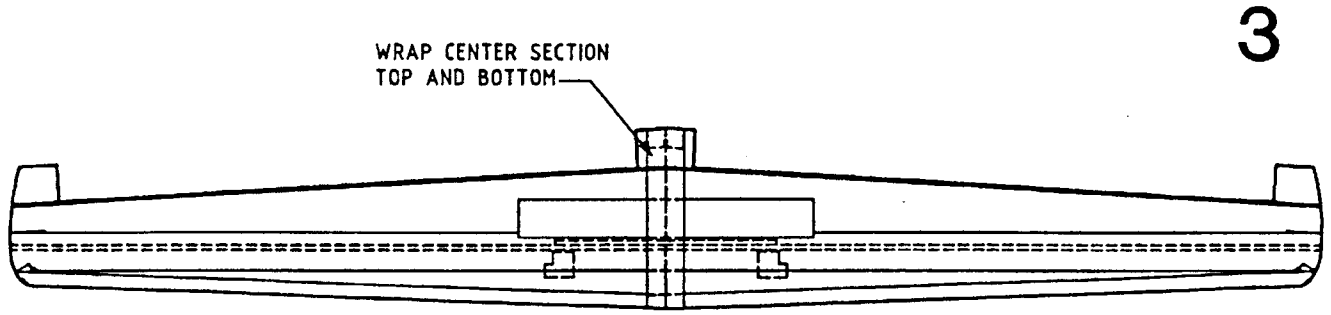


FUSELAGE DETAIL

FULL SCALE DRAWING - MAY BE USED AS A TEMPLATE







NOTE!
CONTACT CEMENT MUST BE APPLIED
TO FOAM SURFACES PRIOR TO
TAPE APPLICATION

WING TAPING

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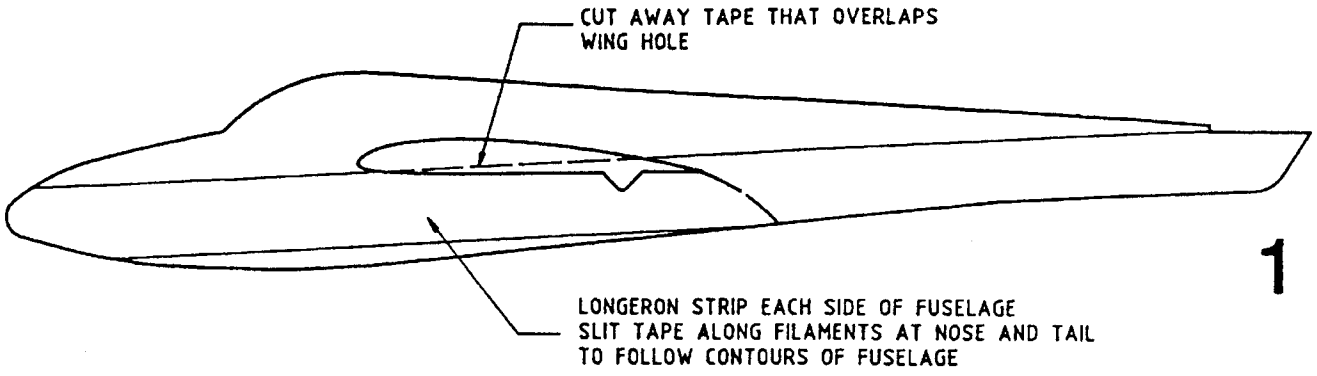

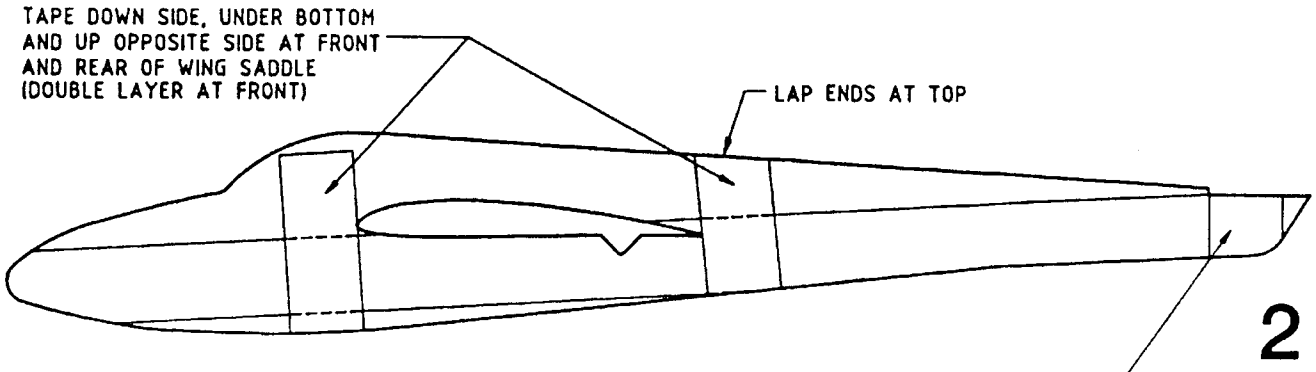

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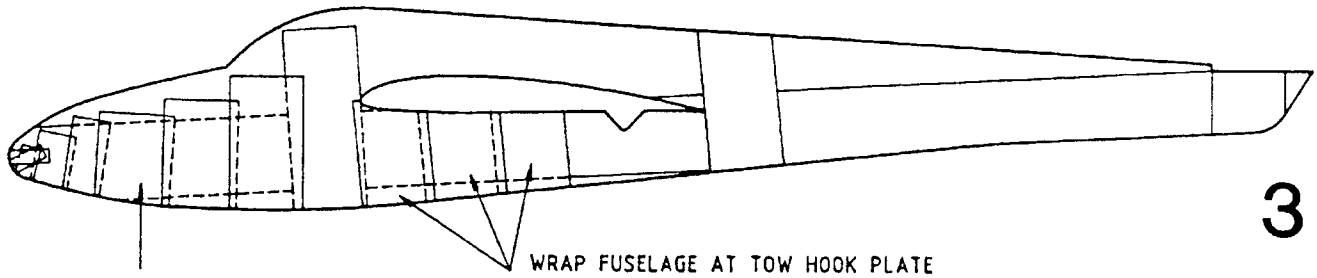

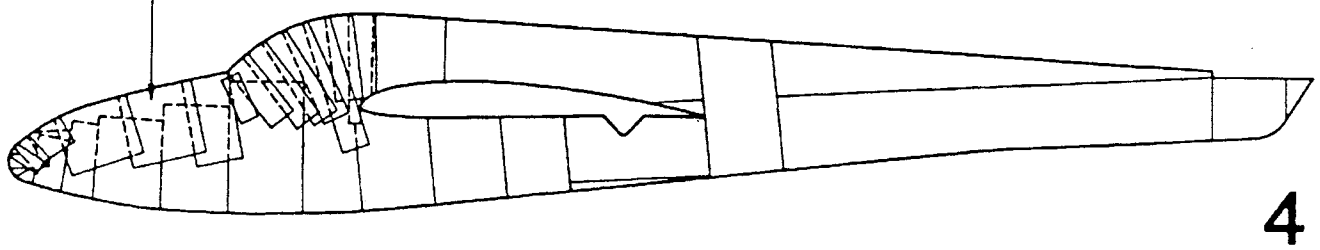

FUSELAGE TAPING

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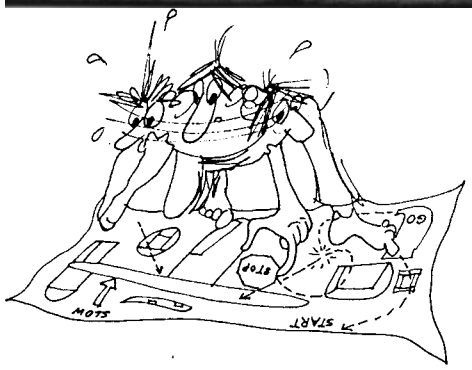


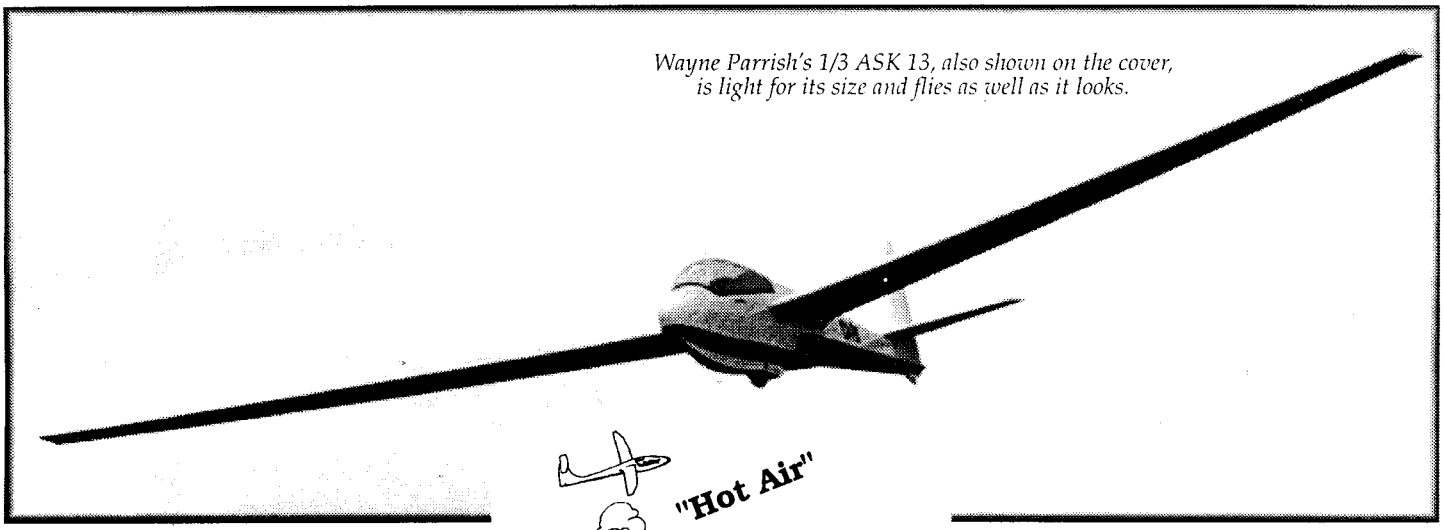
U-2 SPY CAMERA

by Steve Savoie

Now that my 1/10th scale U-2 is flying, it's time to start looking at taking some aerial pictures. I've never set up a camera in a glider before, but I did have a few simple requirements. It had to be light weight, have a motor film advance, fixed focus (no ultra sound or IR focusing), fit inside the fuselage, be easily activated by a servo, have easy film access and, above all, be low cost ($25.94 at Wal-Mart). The camera which met these requirements was the Kodak F300 ADVANTIX, which uses the new Advanced Photo System film.

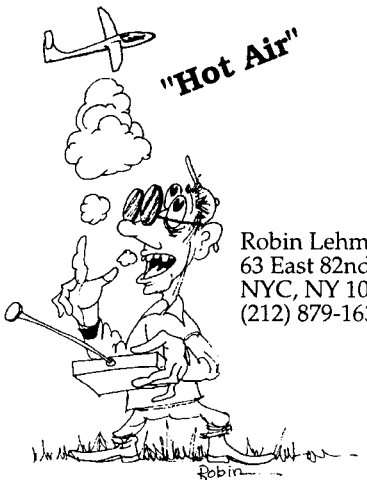
The film system loads from a small access in the bottom of the case as well as 2 AAA batteries which operate the motor advance, electronic flash [taped over] and electronics. The camera uses 200 speed film only, so it's best to use it on sunny days. My only modifications were to tape over the electronics flash to prevent flash reflection by the internals of the fuselage and to hot glue the camera to the access hatch on the bottom of the fuse. I also attached a standard servo with a rounded over servo arm to a Rohacel block that was also hot glued to the camera. The servo was tied into the nose release channel on the radio so that multiple (15) shots could be taken when in flight. The access hatch was cut to provide a 1 1/4" viewing port for the lens, and small replaceable strips of transparency sheet were cut into 2" squares and taped over the lens aperture in the hatch, cheap and replaceable after every landing.

The entire installation is estimated to add 11 oz. to the overall flying weight. Test shots (1 roll) were taken with the camera mounted to the fuse (not in flight) but remotely controlled by the radio. The first actual test will be during the Soar Utah event on Labor Day. See ya next month, hopefully with some in flight shots. ■



Wayne Parrish's 1/3 ASK 13, also shown on the cover, is light for its size and flies as well as it looks.

"Hot Air"



Robin Lehman
63 East 82nd St.
NYC, NY 10028
(212) 879-1634

Frank Oeste, Germany, poses with his 1/3 (Frenck) Breguet Chucas built by Arnold Hofmann. Elmira 2000.

Ralf Schiefele brought this impressive DG 1000, which he will be producing with completely installed hp and go motor, as well as in pure glider form. This model has no electric motor. Elmira 2000.

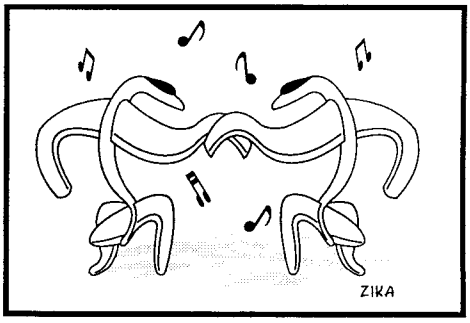
(R) Fred China's 1/4 Karakan, scratch built beauty, spans 5 meters and took some 7 months to build. It won best vintage and best of the Elmira 2000 event.

On the first day of flying, it was very windy, which afforded great lift for the full size sailplanes, such as this ASK 21. Elmira 2000.

Pete George (St. Louis, Missouri) did plenty of towing when the wind was less than 20 knots. He could tow up 10 sailplanes on a tank of gas with this 1/4 DO 28, powered by a Brison 4.2. Pete's rock steady tows were a pleasure to be behind! Elmira 2000.

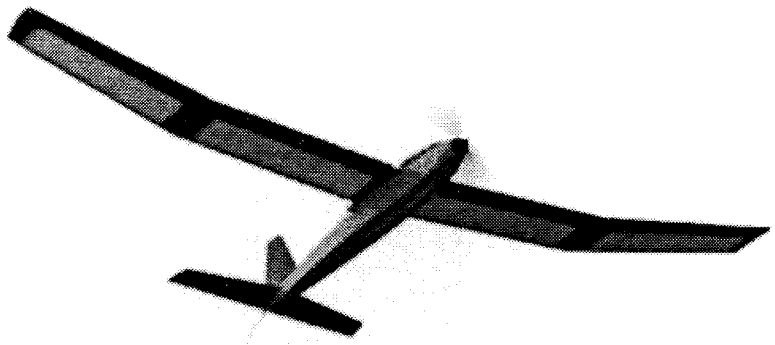
The Great Midwest Oc-Tow-Berfest 2000

Three Days September 29 - October 1
St. Louis, MO. area Fun Fly Aerotow
for Giant Scale R/C Sailplanes.
Sponsored by the Midwest Air Wing R/C Club.
Pilots Choice Awards for Best Modern and
Vintage Sailplane as well as Best Towplane.
Food available on Saturday and Sunday.
Field open to early arrivals on Thursday.
$20 Entry Fee / Towpilots Free
Event Coordinator Peter George 314 664 6613
twometer@worldnet.att.net
Flying begins after 9AM pilots meeting.



Kit Review

THE ELECTRIC CONNECTION



Ace R/C Whisper 1400 Electric Powered Sailplane

Mark Nankivil
7411 Canterbury Ave.
St. Louis, Missouri 63143
(314) 781-9175
nankivil@flashcom.net

Whisper 1400 Specifications:

Wingspan:	1400mm (55")
Length:	825mm (32.5")
Wing Area:	323 square inches
Weight:	21 ounces

The Whisper 1400 from Ace R/C is a bit different than my usual kit review in that this is more than just a kit. The Whisper 1400 is a complete system that, with everything in the shipping box, will allow someone to put in the air an electric powered sailplane without having to buy any other items except glue and AA batteries for the transmitter. When Tom Runge at Ace R/C first told me about the Whisper 1400, I though he was talking about the WattAge Whisper being sold by Hobby Shack. This is not the same model nor anything related to it. With the Whisper 1400, you receive the following in the shipping box:

- Pre-built fuselage with Speed 400 size direct drive motor, folding prop, receiver, two HS-101 servos, motor control and rudder already mounted and finished
- Pre-built and covered left and right wing panels
- Pre-built and covered horizontal stabilizer/elevator
- Hitec Focus II transmitter
- 5 cell Sanyo 600mah Nicad motor pack
- Charger
- Instruction Manual and miscellaneous small parts

All you need to add to this is 30 minute epoxy or alphatic resin glue, screwdriver and hobby knife, and 8 - AA size batteries. Pretty complete outfit!

In thinking about how to approach doing a review of the Whisper 1400, I decided that the Whisper 1400 could be seen as a model that someone who wants to try an electric model would be interested in purchasing without having to worry about buying all of the other support equipment. This works fine in practice and I have seen three Whisper 1400 systems head out the hobby shop door precisely because of the complete packaging of the system.

The instructions manual is well done and complete. I took the mindset of a beginner and followed the instructions step by step. Be sure to read the manual at least once prior to starting the assembly process and you should be fine. Assembly of the model is easy and the only item that I added to what was outlined in the manual was to tape the polyhedral joints after gluing them together.

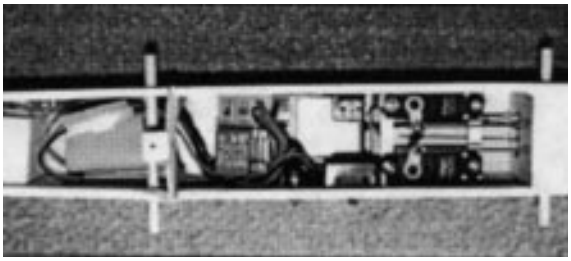
Maybe you were like me and wondered how can you get three functions - rudder, elevator and motor - from a 2 channel radio? Well, the Focus II is a 2 channel radio and the rudder and elevator functions are handled there as you would expect. As for motor control, you do not have a on/off or throttle capability with the Whisper 1400. What you do have is an auto-cutoff with BEC function that allows for the motor pack to operate the receiver and servos and a push button switch that operates your motor. Once the motor is on, it will run until the cutoff voltage is reached at which time the auto-cutoff shuts the motor down and leaves you with power to continue operating the receiver and servos. In the event you meet with terra firma, your Whisper 1400 and the motor is running, there is a fuse on the auto-cutoff that will do its thing to save your model to fly again. Changing the fuse is super simple, so it might be wise to pick up some spares at Radio Shack and have them in your flight box should the need to use them arise. All in all, this set up might seem to be a limitation but, in practice, I haven't seen a problem. It wouldn't surprise me to see Ace R/C come out at a later date with a Whisper 1400 equipped with the Hitec Focus III and either an on/off switch or speed controller but, of course, at a higher initial cost. From a marketing standpoint, this set up in the Whisper 1400 is a fair solution that helps to keep the initial cost down.

Whisper 1400 in flight - nice handling, stable model that should make a good trainer.

The instruction manual shows how to check the balance of the model. The balance point is called out clearly though I can see where a raw beginner might not know how or where to hold it to achieve the correct balance point. Battery charging is clearly explained as well and should be no problem either. Since the motor runs until the auto cutoff kicks in, the batteries should be nearly depleted each time they're hooked up to the charger which should help protect against overcharging and damaging the batteries. The manual also has an Operational Check section that takes you step by step through checking the model and making sure you're ready for the first flight.

With the Whisper 1400 assembled, checked and ready to fly, it was waiting time for some good weather and a free day to head out to the field. After a few weeks wait, it was off to the sod farm. Winds were 5-10 mph out of the west with a solid cloud cover. After charging the batteries and installing them in the Whisper 1400, the motor was switched on and the Whisper 1400 was given a gentle push directly into the wind. Climb out was gentle - after all, it's only a 5 cell pack and Speed 400 size motor - but positive and was probably

Ace R/C Whisper 1400 Kit/System



As you'll see in the photo of the fuselage interior, from L to R, the two Hitec HS-101 servos are already mounted and just need to have the pushrods secured in place. Forward of the servos is the receiver and the motor auto-cuttof/BEC switch. Just forward of the bulkhead is the 6 cell, Sanyo 600mah Nicad battery pack. Motor is out of photo on the right.

around 400 to 500 feet/minute. Lift was sparse but the Whisper 1400 would signal entry into lift with a wing wag and a pick up in speed. Control was positive and very stable, something that should be good for a beginner as long as they don't get the "death grip lock" on the transmitter stick. I timed the motor run from start to cutoff at nearly 8 minutes which is a surprisingly long time when you're waiting for it to happen. When the motor cuts off, there is a slight trim change but it isn't too noticeable and you're more likely to know the motor is off because of the drop in climb rate. Lift on the first flight wasn't really good yet total flight time was right at 20 minutes. Landing is easy and just a matter of flying it until touchdown. Later flights were just as easy and I plan on using the Whisper 1400 as a basic trainer with new club members or others who are interested in learning more about flying R/C models.

Ace R/C Whisper 1400 at rest.

The Whisper 1400 is a well made, thought out model that is reasonably priced and should help anyone who is new to radio control flying - and electrics in particular - to have a successful first try at flying. As always, beginners should seek out help from someone who already is experienced with R/C flying, but I would recommend the Whisper 1400 as a starting point for someone interested in taking up R/C flying.

You can find the Whisper 1400 at most local hobby shops for around $150 to $180 - be sure to support your local hobby shops! If you can't find it there, you can order directly from:

Sky Hobby
1810 Main Street
Higginsville, MO 64037
660/584-7556, 800/241-7556
www.skyhobby.com

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Closet Scale Stuff
At Sailplanes Unlimited. Ltd.

1/3 Pribek ASW 27 - 5 meter span (196"), wing profile HQ 2.5/12, ca. 20 lbs.

1/4.2 FiberClassics Nimbus 4 - 6.28 meter span (246"), wing profile E 68-66, ca. 18 lbs.

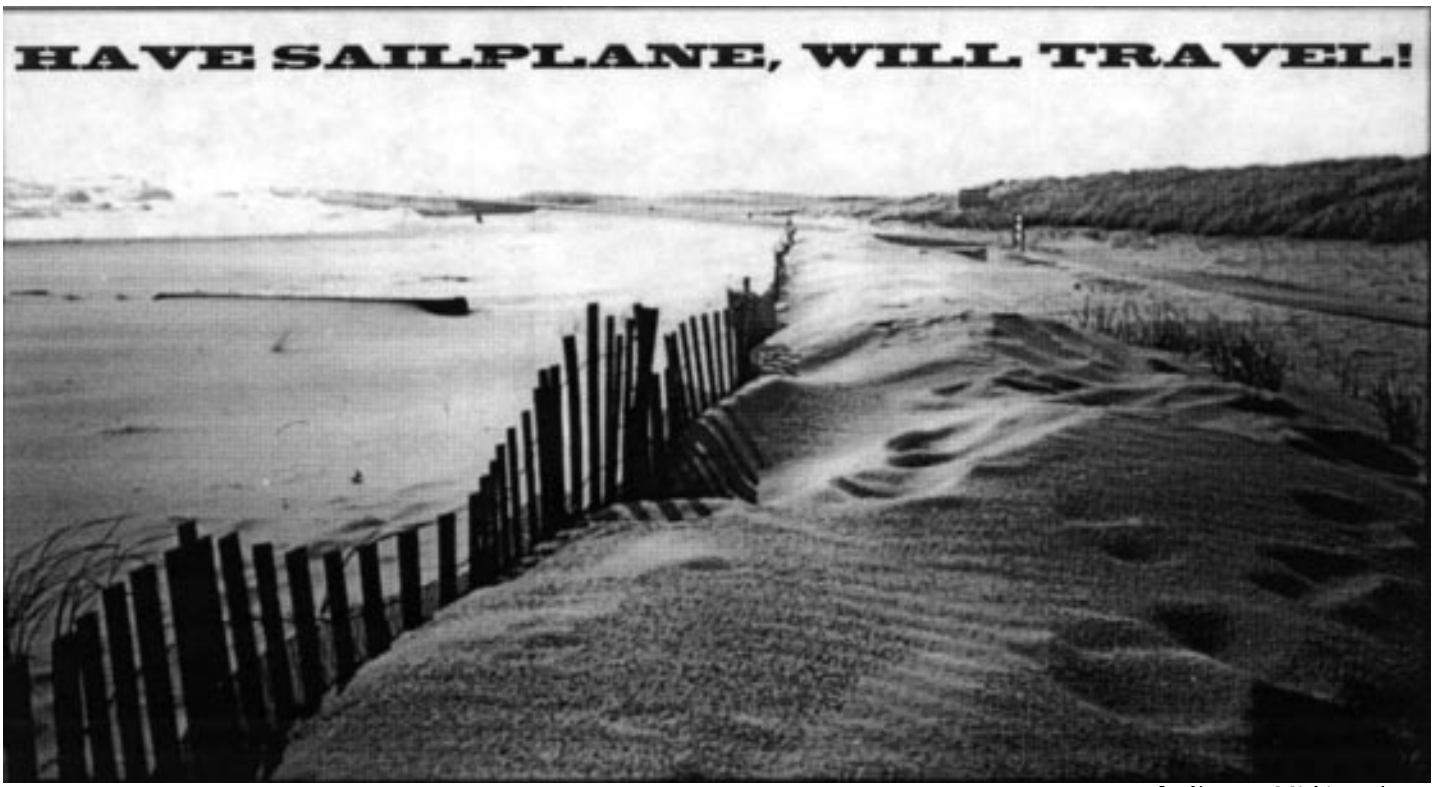
1/3.6 Roedelmodell DG 800 - 4.15 meter span (163"), wing profile E 207, ca. 11 lbs.

1/3.75 Roedelmodell Fox MDM-1 - 3.8 meter span (149"), wing profile RG 12, ca. 15 lbs.

1/2.77 PriBek ASW 19 - 5.4 meter span (212"), wing profile Ritz 3 mod., ca. 20 lbs.

Please call for additional info: (212) 879-1634.

HAVE SAILPLANE, WILL TRAVEL!



Ludington, Michigan dunes. Photo by Nancy Heath.

Tom H. Nagel
904 Neil Ave.
Columbus, Ohio 43215
tomnagel@iwaynet.net

Loyal Readers (both of you),

This has been a strange summer for writing. I have been like a dead carp in the river of air — moving along downstream, following the path of least resistance, and not getting much done. Sometimes you are struck by the Muse; sometimes you strike out. My muse, Judy Slates, finally snuck up behind me and struck me upside the word processor. By golly, there were a couple of columns in there, after all!

Sloping at Ludington, Michigan (or) Isn't Possum Lodge Around Here Somewhere?

Some of you with a talent for trivia may remember the first installment of "Have Sailplane, Will Travel!" — my saga of a family vacation to Leland, Michigan and my repeatedly thwarted attempts to fly off the famous 500 foot Sleeping Bear Dunes. Family plans, bad weather and grandma all conspired to limit me to more than ten minutes in the air for a whole week.

This year the Heath Family Mass Migration took us to Ludington, Michigan, about two hours south of Sleeping Bear, Elberta and Frankfort. Topozone.com showed dunes along the lakeshore. I packed sailplanes and plotted revenge.

I got hold of Martin Doney with whom I had never succeeded in flying with during the last trip, and told him I was coming. He arranged to be out of town.

I put a new travel pack together. I ditched the old "Time Magazine" book bag. It has my fishing stuff in it now. I switched over to a hi-tech backpack designed for a laptop computer — it came to the office free after we ordered a gazillion dollars of office stuff from Staples. It has cushioning, lots of little pockets for glue and tool, and even a flat pack space for notebooks and Zag winglets.

I cleaned up the Zagi LE and THL and made new winglets. My Zagis tour in a rack made out of stick and coat hanger wire, and I tape the winglets on at the slope.

And I prepared the RPVI U-2 for travel by dismounting the wings and wrapping them in bubble wrap. The fat EPP fuselage traveled in the back of the mini van like a loaf of French bread with control surfaces. Add the U-2 to the list of planes that travel well in a crowded van.

Finally, I printed maps from topzone.com to augment the AAA trip-tik. And we were off.

Ludington, Michigan is named after a 19th Century timber baron who sited the town at the estuary of the Pere Marquette River on the shores of Lake Michigan, just about halfway between the Indiana border and the Soo. It was the logical place for Fred Ludington to set up a railroad and wagon ferry across Lake Michigan to Manitowoc, Wisconsin, and the steamer still runs today. Wisely, the founding fathers named the town Ludington, rather than Fred. I mean, who would go on vacation to Fred?

As a result of the ferry, Ludington is an easy drive from most of the midwest, only 7 hours from Columbus, or Chicago or Madison, Wisconsin or Cleveland. (We did not test for Seattle or Tampa. Your mileage may vary.)

Ludington is not nearly as touristy as Leland, Michigan, but it does boast several very nice restaurants, a swarm of Victorian Bed and Breakfasts, and a beautiful Romanesque red sandstone courthouse.

Also worth a visit is the Pere Marquette National Scenic River. There is plenty of opportunity for lake and river recreation in the area.

Most of the flyable slopes in the Ludington area face west; therefore, in accordance with tradition, the Heath Family Mass Migration arrived amidst howling south winds. This gradually moderated into howling south winds and driving rain. We were off to a great start.

Nancy, Mike, Kay and the grandfolks scouted for restaurants. I scouted for slopes and RC resources. We were staying at the Four Seasons, a very nice motel run by Keith and Suzette more like a B&B than a motel. Just a few blocks away is Ludington's RC shop — "Allard's Irrigation and Model Shop." I had visions of the Red Green show flashing through my mind. However, the folks at Allard's were very helpful, put me in touch with the local RC club, and suggested that Buttersville Township Park on the south point of Pere Marquette Bay was a good place to slope.

Mike wanted to hike out to the Ludington Light, off the south breakwater. This gave me a good excuse to scout Buttersville Township Park, and while it is not Sleeping Bear Dunes, it looked to be a very accessible and flyable west facing, dune slope, with good access and easy parking. Naturally, once the rain stopped, I never made it back there. Things were following their usual course.

I did however get to visit the site of Pere Jacque Marquette's death, right near Buttersville Township Park. Pere Marquette had journeyed south on the Mississippi to the Arkansas River, encountered some early Clinton ancestors, took sick and died on his way back to Sault Ste. Marie, all 120 years before the American Revolution. Those French dudes got around.

Eventually, I found a very nice south-facing slope in the Skyline Trail in Ludington State Park. The state park folks didn't seem to mind if I toted RC stuff up the 165 steps to the ridge-top board walk. Of course, by then the south winds had switched to southwest, and my Zagi glided sedately down to the bottom of the dune, and I hiked out from there.

Ludington State park is a gem of a place, by the way. There is a great beach on a warm inland lake, a two mile hike out to the Big Sable Point lighthouse, fishing in the crystal clear waters, biking, and even a self-guided canoe trail. For power boaters, Ludington State Park has some very nice flyable dues on the north end of Hamlin Lake, best reached by power boat, since no roads go there. Of course, we had no power boat, either.

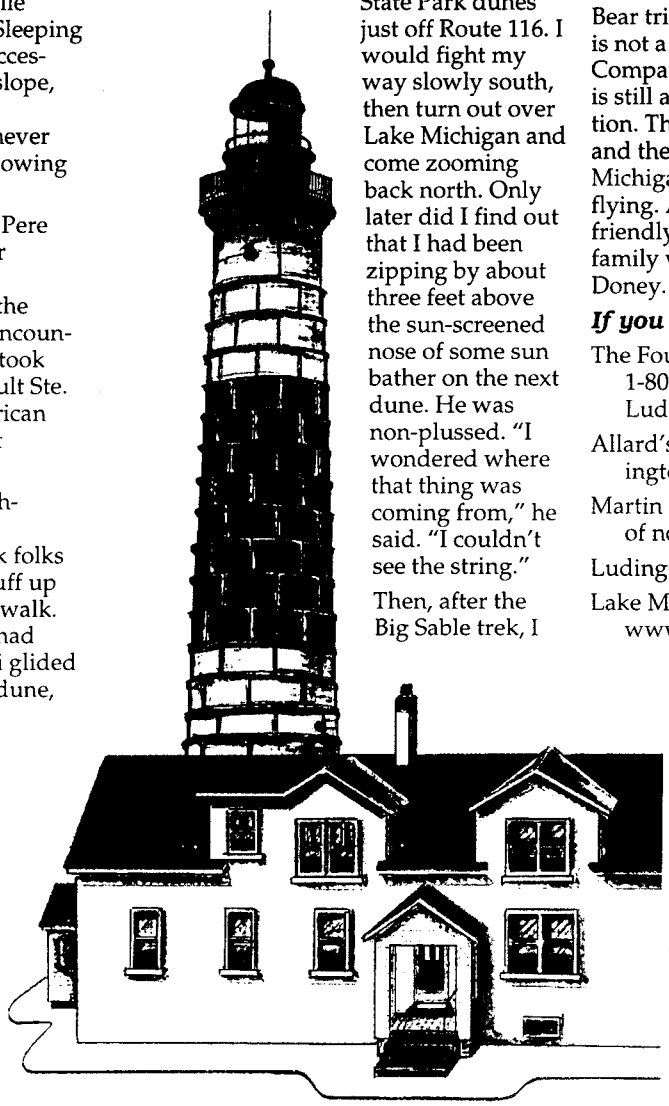
We did the two mile hike out to Big Sable Light. I made the tactical error of not taking my Zagi THL along. The winds had turned west, and I could have done a two mile goal and return simple flight by flying the Zagi along the dunes as we hiked. My family contends that this would not have been possible, given my track record in the walking and chewing bubble gum event.

Big Sable Light is a case study in protective coloration. It was originally built out of native sandstone, and when completed it effectively disappeared against the Ludington dunes. It was the same color as the sand. D'Oh. The feds had to immediately paint it in black and white stripes so that shipping could see it, and so that the lighthouse keeper could find it again in the morning.

I had brought three planes along on this trip, as opposed to two planes on the Sleeping Bear trip. For a while it looked like I was going to get 150% more non-flying done as a result. Then my luck changed.

The steady south winds shifted to southwest, and I spent a lovely afternoon with the Zagi LE flying along the Ludington State Park dunes just off Route 116. I would fight my way slowly south, then turn out over Lake Michigan and come zooming back north. Only later did I find out that I had been zipping by about three feet above the sun-screened nose of some sun bather on the next dune. He was non-plussed. "I wondered where that thing was coming from," he said. "I couldn't see the string."

Then, after the Big Sable trek, I broke out the Zagi THL and had a nice late afternoon fly in light west winds, with brother in law Mike and his wife looking on. I think they finally figured out what I had been talking about all week, and maybe understood a little bit of the magic of RC sloping.



Graphic: Big Sable Point Lighthouse Keepers Association
www.bigsablelighthouse.org

This column is dedicated to soaring vacations. If you have a favorite sailplane saga, consider writing it down for *RCSD*. If you are planning a vacation that includes your plane and transmitter, consider making notes as you go, and working up an article later. Take photos. Collect maps. And send your story to Tom Nagel at tomnagel@iwaynet.net for gentle editing and suggestions.

Tom

The U-2 never made it into the air this trip, but I nevertheless logged four or five times as much flying as on the ill-fated Sleeping Bear trip. Unlike Sleeping Bear, Ludington is not a fantastic flying destination. Compared to Columbus, Ohio however, it is still a pretty darn good flying destination. The dunes max out at 50 to 60 feet, and the smooth wind coming across Lake Michigan makes for some great slope flying. Also, the local park folks are flyer friendly, and it is a great destination for a family vacation. And there is Martin Doney.

If you go, check out:

The Four Seasons Motel and Kayak Livery: 1-800-968-0180, 717 E. Ludington Ave, Ludington, MI 49431

Allard's RC and Irrigation: 611 N. Washington Street

Martin Doney: 231-891-3622 (in the middle of nowhere, nearby Baldwin, Michigan)

Ludington State Park: 231-843-2423

Lake Michigan Car Ferry: 1-800-841-4243 or www.ssbadger.com

Silver Lake State Park: 20 miles south, home of the word's largest shifting dunes

Dave's Four-In-One Store: crafts, hardware, housewares and military surplus

Local events not to be missed:

May 16th: the Blessing of the Bicycles at St Anne's Church

June 12th: National Asparagus Festival

June 24-27th: Flea Roast and Ox Market

Sept 19: Blessing of the Animals and the Farm Olympics

■

CROSS COUNTRY SOARING

Scott Gradwell
Medford, Oregon
rcpilot@cdsnet.net

This has been a hectic month and, if you are reading this column in the August issue, don't thank me, thank Judy. In other words, I am saying it is a bit late. It just seems like one of those months where a lot of things are happening.

My brother, father, and I purchased a full size LK-10A, aka TG-4, back in March and have been fixing some items, improving others, and trying to get the air worthiness certificate back all this time. It should be back in the air shortly. Also, the local club I belong to was beginning to fly again because the farmer had mowed the hay on the field we fly off of. I hold a monthly thermal duration contest, so I needed to get that going again. I say was beginning to fly again, because as soon as we got the field back and held a couple of events on the field, some trouble makers screwed with the hay, we were blamed, so we lost our flying field.

The field is owned by the local school district and one of the neighbors absolutely did not want us out there. So we were blamed for everything that happened out there, even though we bent over backwards to accommodate the school and the neighbor. It is frustrating to lose your flying field; it makes getting motivated to build sailplanes a little bit harder. We do have an option or two, but nothing firm yet.

In addition to this, I am hoping to fly a full size Ka-6E in the next SSA regional contest for the very first time, so I have been trying to get prepared for that.

Total Energy System

Last month, I wrote a bit about varios and how they help X/C soaring. But what is even better than having a vario, is to have a vario with a total energy system. Well, to talk about a total energy system, we first need to figure out what total energy is and why it would help us to know what the total energy of the sailplane is doing.

If we take a sailplane at altitude, cruising through the air, it has height and it has velocity. So, we can state the total energy equals the sum of the potential energy (height) and kinetic energy (velocity). In a glide down, on a calm morning, we know that we are continually losing energy as our potential energy (height) is decreasing. But what happens if we pull back on the stick and climb? We know we will slow down, so the total energy of the sailplane has not changed. All we have done is trade kinetic energy (velocity) for potential energy (height). A total energy system will compensate for this and you will not see or hear any indication from the vario.

There are several different methods to accomplish this. The simplest way for us to do this is to make a total energy probe. The type of probe we are looking for is one that will measure the airspeed, but with a negative sign, meaning suction instead of pressure. That way if you speed up by diving, the suction increase that was caused by the airspeed increase will be offset by the increase in atmospheric pressure by losing altitude and the net sum will be zero.

Therefore, you will not get a tone on your variometer.

In a full size sailplane you can hook up an airspeed indicator backwards and verify the amount of suction; your probe is the same as your regular airspeed indicator. If you are under compensated (need more suction) or overcompensated (need less suction), you can work on your total energy probe. The indications of being under compensated is that you will get the same indication as if you didn't have a total energy probe, only not as great of an indication. If the probe is over compensated, you will get the opposite tone as you expect.

With modeling, everything has to be trial and error. You make a probe, go up some early calm morning and see what happens. As you are coming back down after launch, slowly pull back and see what your variometer reads. If it says you are going up, then you need to increase the suction of your probe; if it says you are going down, then you need to decrease the suction of your probe; if it gives no indication, then as long as the variometer isn't broke, the probe is set up correctly.

Once the total energy probe is set up correctly, you will have a more accurate indication of what the air is doing. Because, if you pull back on the stick, the variometer will do nothing. It will only give you a positive reading when your sailplane is actually gaining energy through lift. And just the opposite in sink.

Total energy probes can be made in many different sizes; it will be up to you to figure out what gives you an exact reading of – 1*airspeed. It should be in the free airstream around the sailplane, which means 4 or more inches long.

The majority of R/C sailplane total energy probes are just a simple brass tube with a hole in the rear. Full size variometers have a nice port in the back of them where you connect the total energy probe. I think the Ace vario has this built in. The other variometers out there need some additional set up.

I know Tom Hoopes was adding a port to the Multiplex Helios vario. I have heard that the new Telario Talk is set up for a total energy system. I am not sure what this consists of though — if it just has a port, or comes with a probe also.

Well, I hope this hasn't confused everyone, but if you fly with a properly set up total energy system, you will have a much easier time centering lift and determining which thermals are worth stopping for. ■

SCHEDULE OF SPECIAL EVENTS

September 15-17

Last Fling of Summer — Broken Arrow, OK
Dave Register, (918) 335-2918
regdave@aol.com
Jeff Naber, (918) 495-1028
nxtdoor@swbell.net
http://www.sitemaster.com/tulsoar

September 29 - October 1

Oc-Tow-Berfest 2000 — St. Louis, MO
Peter George, (314) 664-6613
twometer@worldnet.att.net

October 21

SAGE Fall Contest — Tucson, AZ
Philip Brister, (520) 394-2121
philipbrister@netscape.net

October 21

Southern California Scale Glider Festival 2000 — Apple Valley, CA
Rick Briggs, (562) 865-2464
http://www.soaringissa.com

For detailed information on events outside of the U.S.A., please view www.sailplanes.com event schedule.

Please send in your scheduled events as they become available!

Classified Advertising Policy

Classified ads are free of charge to subscribers provided the ad is personal in nature and does not refer to a business enterprise. Classified ads that refer to a business enterprise are charged $5.00 per month and are limited to a maximum of 40 words. The deadline for receiving advertising material is the 15th day of the month. (Example: If you wish to place an ad in the March issue, it must be received by February 15.) *RCSD* has neither the facilities or the staff to investigate advertising claims. However, please notify *RCSD* if any misrepresentation occurs. Market Place Listings are $5 a month. Personal ads are run for one month and are then deleted automatically. However, if you have items that might be hard to sell, you may run the ad for two months consecutively.

For Sale - Business

PC-Soar Version 3.7 Sailplane Performance Evaluation Program with Airfoil and Sailplane Library expanded to 60 models including Chrysalis, Anthem, Genesis, Peregrine, Probe, Thermal Eagle, and Spectrum. Airfoil library includes 322 polars with 56 UIUC polars. PC-Soar with Libraries of Sailplanes and Airfoil Polars plus a new Excel utility for working with multi taper wing areas and aerodynamic centers. Reduced Cost: $50 + $3 P&H. PC-Soar library and software Upgrade to Ver. 3.7: $10 + $3 P&H. LJM Associates, 1300 Bay Ridge Rd., Appleton, WI 54915; ph: (920) 731-4848 after 5:30 p.m. weekdays or on weekends. E-mail: lmurray@athenet.net. PC-Soar Web Page: <http://www.athenet.net/~atkron95/pcsoar.htm>.

PARACHUTES: $10. Dale King, 1111 Highridge Drive, Wylie, TX 75098; (972) 475-8093.

DesignAire: EASY TO USE AIRCRAFT DESIGN SOFTWARE (PC). 3-D sketch, performance, Wt/Bal, inertias, color graphs, panel analysis, static stability, airfoils, envelope, FAR 23A loads and envelope. Runs "airfoil ii". $119. JammAero POBox 236, Horntown 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>.

For Sale - Personal

1/4 Roedel Super Cub (towplane), 2.687 meter span, wing profile Clark Y mod. (suitable motors are 160 T, 300 T, OS BGX-1, Brison 3.2 or similar), NIB... $385.00. Contact Robin Lehman, 63 E. 82nd St., New York, NY 10028; (212) 879-1634.

1/4 Scale Mosquito, nice airplane, good shape... $550 or $920 w/all servos, etc. Oden, like new, flown about 10 times, 135" span, very gentle to fly, has air brakes... $650 w/all servos. Eclipse V, all molded, very nice, good thermal ship... $500 or $735 w/all servos. Add S&H. Dale King, (972) 475-8093, Wylie, Texas.

Hobby Shops that Carry RCSD

Gunnings Hobbies
538 San Anselmo Ave.
San Anselmo, CA 94960
(415) 454-3087

Gyro Hobbies
23052 Lake Forrest Dr.
Unit C2
Laguna Hills, CA
(714) 583-1775

Hobbies"N Stuff
9577-L Osuna Rd. NE
Albuquerque, NM 87111
(505) 293-1217

Hobby Town U.S.A.
8060 S. 84th St.
La Vista, NE 68128
(402) 597-1888

Hobby Warehouse
4105 South Street
Lakewood, CA 90712
(562) 531-8383

King R/C
Five Forks Village
King, NC 27021

Tim's Bike & Hobby
2507 Broadway
Everett, WA 98201
(206) 259-0912

R/C Soaring Resources

These contacts have volunteered to answer questions on soaring sites or contests in their area.

Contacts & Soaring Groups - U.S.A.

Alabama - North Alabama Silent Flyers (NASF), Ron Swinehart, (256) 722-4311, <ron.swinehart @lmco.com>, or Rob Glover at AMA3655@aol.com, http://sh1.ro.com/~samfara/

Alabama - Central Alabama Soaring Society, Ron Richardson (Tres.), 141 Broadmoor Ln., Alabaster, AL 35007, <ron_mail@bellsouth.net>.

Alabama - Southern Alabama & NW Florida Aerotow, Asher Carmichael, (334) 626-9141, or Rusty Rood, (904) 432-3743.

Arizona - Aerotowing, slope sites in AZ (rugged), Arizona Flying Eagles R/C Demo. Show Team, Dave Wenzlick, (480) 345-9232, <azdw@uswest.net, or visit CASL at <http://www.public.asu.edu/~vansanfo/casl>.

Arizona - Southern Arizona Glider & Electric (Tucson area), Philip Brister (contact), philipbrister@netscape.net, (520) 394-2121. SAGE welcomes all level of flyers!

Arkansas - Northwest Arkansas Soaring Society, Tom Tapp (President), RT 2 Box 306, Huntsville, AR 72740; (501) 665-2201, eve.

California - DUST, Buzz Waltz, 68-320 Concepcion, Cathedral City, CA 92234, (760) 327-1775, <buzzwaltzrc@excelonline.com>.

California - High Desert Dust Devils, Stan Sadorf, 14483 Camrose Ct., Victorville, CA 92392; (760) 245-6630, <Soareyes@aol.com>.

California - Inland Soaring Society, Robert Cavazos, 12901 Forman Ave., Moreno Valley, CA 92553, RCAV@aol.com.

California - Northern California Soaring League, Mike Clancy, 2018 El Dorado Ct, Novato, CA 94947; (415) 897-2917.

California - Sacramento Valley Soaring Society, Dudley Dufort, 225 30th St., Suite 301, Sacramento, CA 95816, (916) 448-1266, <www.svss.org>.

California - Soaring Union of Los Angeles, John Bruce, 908 W 245th St., Harbor City, CA 90710, (310) 534-0948, <rcflyinman@aol.com>.

California - South Bay Soaring Society, Mike Gervais, P.O. Box 2012, Sunnyvale, CA 94087; (408) 683-4140 (H), (650) 354-5469 (W).

California - Southern Calif. Electric Flyers, John Raley (President), 1375 Logan Ave., Costa Mesa, CA 92626; (714) 641-1776 (D), (714) 962-4961 (E), e-mail: E-Flyer@ix.netcom.com.

California - Torrey Pines Gulls, Ron Scharck, 7319 Olivetas Ave., La Jolla, CA 92037; (619) 454-4900.

Colorado - Rocky Mountain Soaring Assn., Phil Weigle, 1290 Salem St., Aurora, CO 80011; (303) 341-9256 eve.

Eastern Soaring League (VA, MD, DE, PA, NJ, NY, CT, RI, MA), Tom Keisling (Pres./Editor), (814) 255-7418, kiesling@ctc.com; Ben Lawless (Sec./Tres.), LawlessB@ang.af.mil; Anker Berg-Sonne (Scorekeeper), (508) 897-1750, anker@ultranet.com; Josh Glaab (Contest Coordinator), (757) 850-3971, ljglaab@pinn.net; <http://www.eclipse.net/~mikel/esl/esl.htm>.

Florida - Florida Soaring Society, a league of Florida soaring clubs. Newsletters available on website <http://www.asterix.specs.com/fss>.

Florida (Central) - Orlando Buzzards Soaring Society (www.specs-usa.com/~ingo/OrlandoBuzzards), Jerre K. Ferguson (Pres.), 4511 Pageant Way, Orlando, FL 32808, (407) 295-0956, <jerre@bellsouth.net>.

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Indiana - Bob Steele, 10173 ST Joe Rd., Fort Wayne, IN 46835; (219) 485-1145.

Iowa - Eastern Iowa Soaring Society (IA, IL, IN, KS, NE, WI), Ed Harris (editor), 2000 NW 84th Ave., Ankeny, IA 50021; (515) 965-5942, <harris.edwin@mcleodusa.net>, <http://eiss.cnde.iastate.edu>.

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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>.

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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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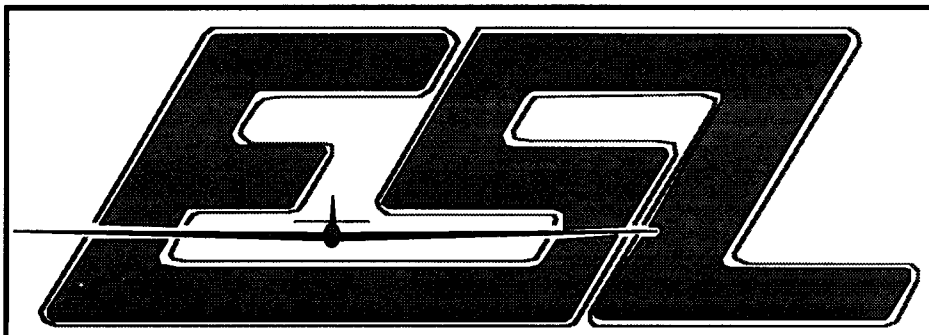

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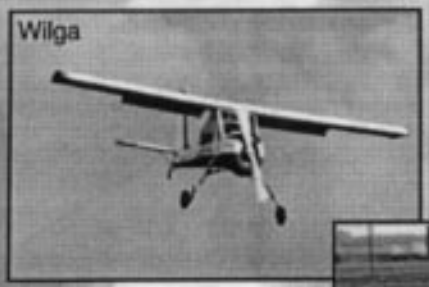

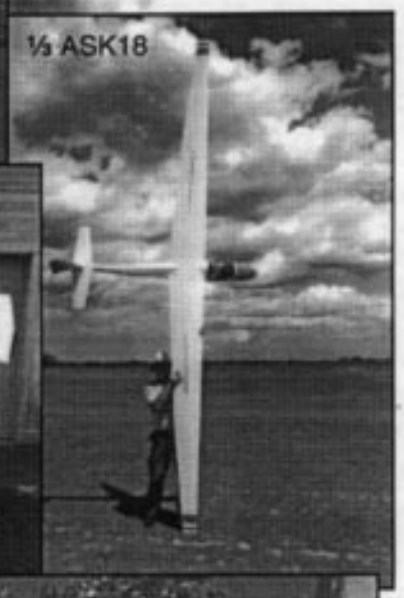

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