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R/C

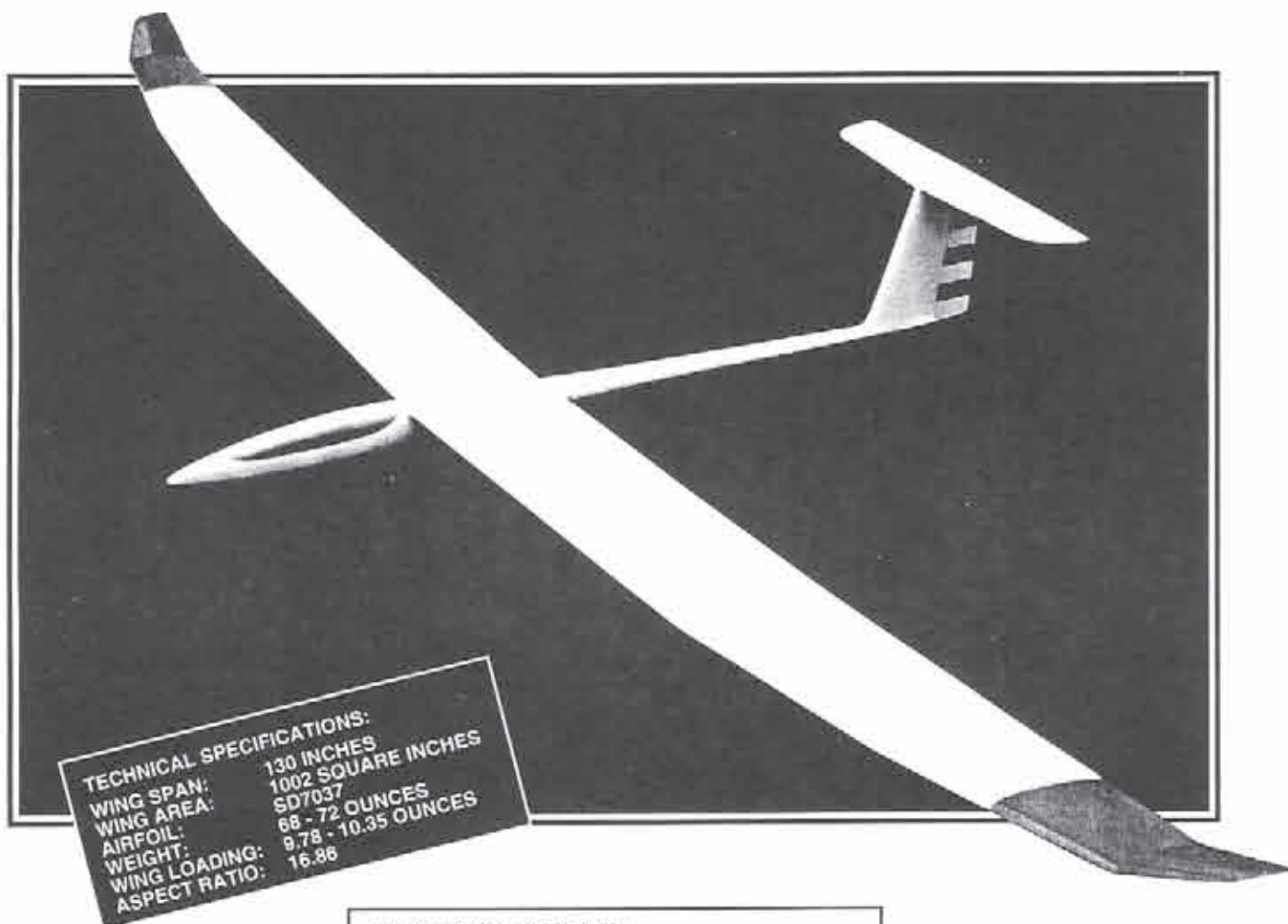
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RCSD ON-LINE EVENT COVERAGE

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

New This Month

Elmira '98 Photography Robin Lehman
A Scale Gathering in Seattle .. Gary Fogel
 Photography by Larry & Gary Fogel

Still Available for On-Line Viewing

Soar Utah '98 Scott Marshall
 Photography by Scott Marshall
Texas National Tournament '98 (TNT)
 Dave Lear
G.N.A.T.S. Third Annual Aerotow Rally
 Gerry Knight & Phil Landray
 Photography by Charlie Rader
Mid-South Soaring Championships '98
 Edwin Wilson
Mid-South Soaring Championships '98
Behind the Scenes: Rumble in the Bluegrass
 Gordy Stahl

Additional Info. Available at the Web Site

Selected On-Line Articles
E-mail/web Addresses for RCSD Reporters
 plus general information
 about their areas of interest
News Items of General Interest
RCSD Index
Bookshelf Listings
Links to Clubs & Organizations
Highlights of the Current Issue
Mailing Status of the Current Issue

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 intrude 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. He can be reached at: 210 East Chateau Circle, Payson, AZ 85541; (520) 474-5015; ajmpe@metzone.com.

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 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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OTHER GOOD STUFF

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Do any of you wonder how Dave Garwood manages to submit photographs that get immediate consideration for the cover?

Dave says, "I turn the camera vertical and put the pictures in an envelope bound for Texas!"

Well, he does do a bit more than that, but if any of you have a photograph you'd like to submit for consideration, we'd like to hear from you!

Damaged or Improperly Bound Copy?

Please let us know, and we'll replace it. Something always slips by every month!

SAILPLANES OVER MASSACHUSETTS

Bob Powers (Clarksville, New York) and Lou Garwood (Plattsburgh, New York) fly a pair of Culpepper Models Chuperosas in light lift over the Atlantic Ocean at Cape Cod, Massachusetts.

Photography by Dave Garwood, Scotia, New York.



Web Site Additions

This month, we've added a couple more articles to the web site courtesy of Gary Fogel and Robin Lehman. Gary talks about an event held in the Seattle, Washington area that was hosted by the Seattle Area Soaring Society (SASS) and the International Scale Soaring Association (ISSA), complete with some beautiful photos of scale ships that were flown at the event. Robin shares some photos taken at Elmira '98, a marvelous scale gathering that will take place in Elmira, New York, again this year. Thanks, guys!

We've also started adding links to clubs, organizations, and special interest groups dedicated to RC soaring; if you wish to have your club linked to the RCSD site, don't wait for us to contact you, shoot us an e-mail anytime. We want to thank those clubs that already have a link to our pages and have noted in recent web browsing: PASS, SLNT, RMSA, CASL, TULSOAR and LASS, so far. Thanks for your support!

And for those of you wondering what we'll be discussing in the pages of RCSD, our primary focus will be technical, construction techniques, and glider design. Now, that's a pretty large area to cover, so we'd

like to have some input from each of you. If you have a specific area you need help with, or have some suggestions for things you'd like to see, please let us know. Of course, we realize that we can't please everybody all the time, but we'll try to cover areas of interest to many of you. And, if any of you have tips or hints that you'd like to share, please send them in.

For those of you new to the pages of RCSD, welcome on-board. Any time you've got a question or need help with your RC project, just let one of us know. While many of us have full time jobs and other obligations, we'll get back to you as soon as we can.

Happy Holidays!
Judy & Jerry Slates

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Jer's Workbench

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Pilatus B-4, Part III

Last month, all the internal framework on the Pilatus B-4 fuselage was completed. At this stage, I'm almost ready to begin construction of the outside skin. Before proceeding, there were a couple of things that needed to be done first.

The framework was constructed for the rudder, a bellcrank was installed for elevator control, and blind nuts were installed for mounting the stabilizer. (Photo #1.) Then, the rudder was pinned to the fuselage structure. The position of the elevator push-pull cable was determined; a hole was drilled in each former, and the push-pull elevator control cable was installed. Then, it was connected to the elevator bellcrank. As it was important to make sure that the bellcrank was moving freely, I worked the elevator cable back and forth by hand. Being satisfied with the position of the push-pull cable, the cable housing was then wrapped with masking tape, and glued in place with CA glue.

The rudder push-pull cable and antenna tube were installed, using the same procedure as the elevator push-pull cable, as shown in photo #2.

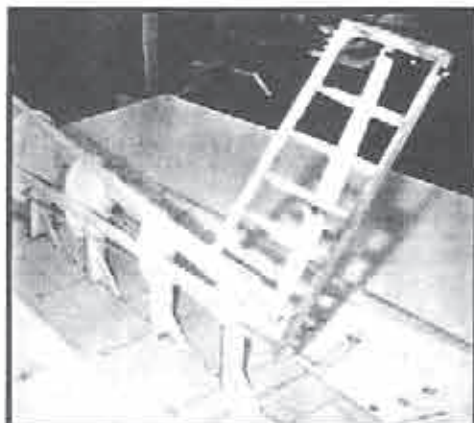
At this point, the rudder was removed from the fuselage. It was time to do the sheeting. A great deal of care is required at this stage; it is important that the elevator bellcrank is not inadvertently glued to the inside of the rudder.

When complete, the rudder was glued to the fuselage; the elevator push-pull cable was connected to the elevator bellcrank. Once the fuselage skin is in place, it is almost impossible to access the elevator push-pull cable and elevator bellcrank, as shown in photos 3 & 4.

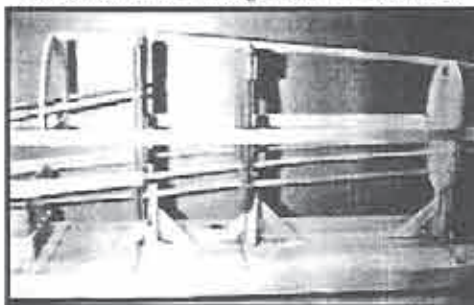
Now, it's time to apply the outside skin to the fuselage structure. The process used will be strip planking, using strips of 3/8" x 1/8" medium weight, balsa wood. Although strip planking may sound like a lot of time consuming work, it's not, really. Once started, the work goes pretty fast, although it can't be completed in one day, at least for me.

Armed with a bottle of "Elmers" carpenter's wood glue, a bag of T-pins, sharp modeling knife, and some sandpaper, I determined the flattest spot on the side of the fuselage, and glued the first strip of balsa there. Moving over to the other side of the fuselage, the second strip was glued the same way. I find that the flattest position is the easiest place to start strip planking. (Photo #5.)

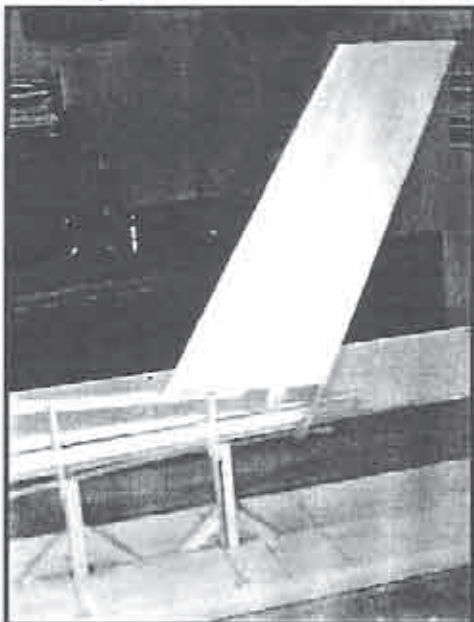
Moving back to the first side of the fuselage, another piece of balsa was selected, cut and trimmed in order to fit snugly against the first strip. As you can see, this process requires some creativity when it comes to cutting and sanding each strip of balsa. As you work around the



#1 - Rudder framework with elevator bellcrank and stabilizer mounting, blind nut installed.



#2 - Pull-pull cables and antenna tube installed.



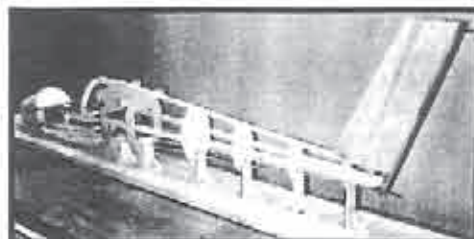
#3 - Rudder installed on fuselage.

fuselage, take one strip at a time and, before you know it, the work will be done.

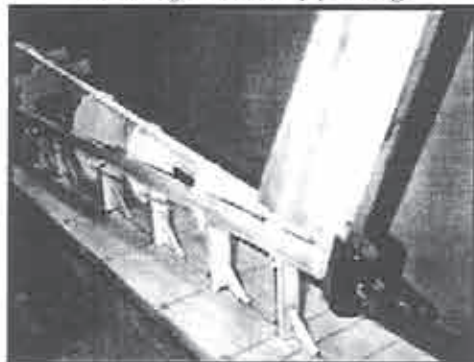
After 6-8 strips have been applied to the fuselage, an awful lot of T-pins will be sticking out all over the place making the job more difficult. It's best to take a break, letting the glue dry overnight. The T-pins can be removed the following day, and the job of strip planking will be easier, until the T-pins get in the way, again. (Photos 6 & 7.)

At this point, however, the wing rod tubes need to be installed in the fuselage, while I still have access. First, of course, I'll need to build the wings. So, it's time to get back to work.

See you next month! ■



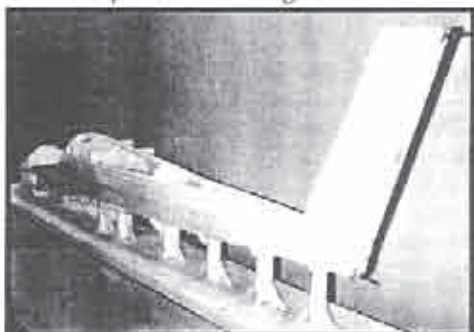
#4 - Ready to start strip planking.



#5 - Strip planking has begun.



#6 - Strip planking on fuselage. Next step is to install wing rod tubes.



#7 - Strip planking on fuselage shot. Next step is to install wing rod tubes.

Building Along?

For those of you building along with Jer, please drop us a line. We'd like to hear how you're doing.

Would it help if we provided some of the more detailed photographs through our web site? At least, a photograph of the construction, from time to time?

on the Wing



P.O. Box 975
Olalla, Washington
98359-0975

E-mail: bsquared@halcyon.com
<http://www.halcyon.com/bsquared/>

DarkStar

Tier III Minus DarkStar is a joint project of Lockheed Martin Skunk Works, Boeing, and Defense Advanced Research Projects Agency (DARPA). Lockheed Martin has primary responsibility for the airframe, Boeing builds DarkStar wings and provides avionics and flight software. Testing is being done at NASA Dryden, Edwards AFB.

A stealthy unmanned aerial vehicle (UAV) designed for a number of reconnaissance roles, DarkStar is not radio controlled. Rather, it follows a pre-programmed flight path with the assistance of a differential global positioning system and a sophisticated internal flight control system.

DarkStar is designed to fly 500 miles at a speed of over 250 m.p.h., remain over a predetermined target at an altitude of up to 45,000 feet for up to eight hours while transmitting information back to its base, and return. Payloads may be high resolution synthetic aperture radar (SAR) or electro-optical (EO) devices. Another long-distance UAV is also under development. Global Hawk, designed by Teledyne Ryan Aeronautical, has a different mission set

http://www.fas.org/irp/program/collect/darkstar_00.jpg

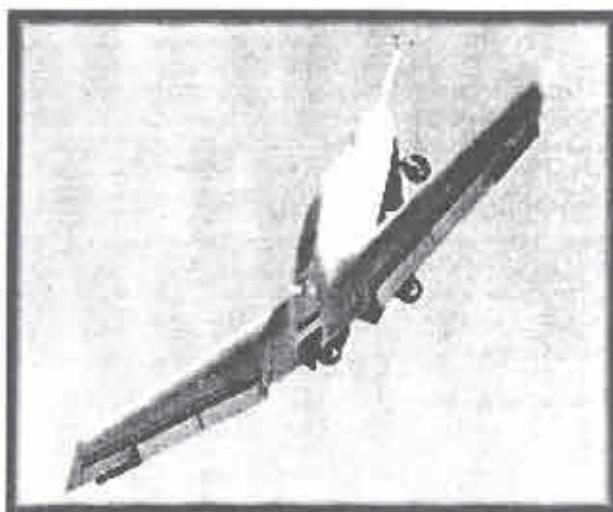


and flight profile. The two systems will eventually be fully integrated.

DarkStar was rolled out on the first of June 1995 and, following ground testing, first flew on March 29th 1996. On its second flight, DarkStar began oscillating in pitch during the final stages of takeoff roll when, due to runway irregularities and/or a wind gust, the main gear left the ground prematurely.

Investigation showed vehicle-ground interaction was not accurately predicted and the control system was unable to effectively damp the oscillations. Seven cycles later, DarkStar jumped into the air. The control system was also unable to rapidly transition from ground to flight mode. As the photograph shows, the aircraft went to a nearly vertical attitude, despite having both ruddervons open and all other control surfaces fully down. DarkStar stalled and fell to the ground.

While a human pilot can make small corrections to compensate for runway irregularities, or react to an in-flight emergency, a UAV must be pre-programmed to deal with anything it may encounter from the beginning to the end of its mission. Boeing engineers made more than 50 changes to the DarkStar onboard computer program,



<http://www.acq.osd.mil/daro/homepage/uav96/darksta2.jpg>

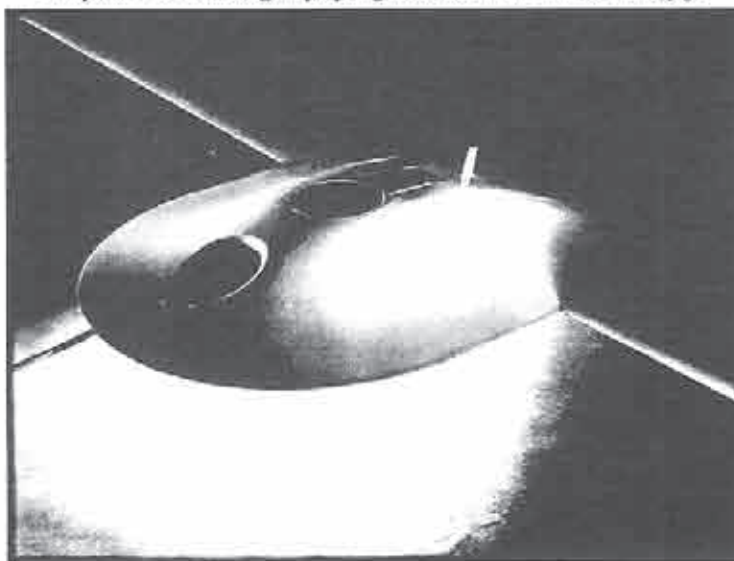
and set up a second command link to more quickly activate the abort sequence.

Boeing engineers also replaced the outer 18" of the elevons, next to the ruddervons, with separate control surfaces. These actively damp the normal structural resonance of the wing and allow the other control surfaces to be programmed for more rapid, and more aggressive, response.

Major modifications were also made to the landing gear. The elevon moment arm is very short — the distance between the elevons and the CG is just four feet. The moment arm to the main landing gear is even shorter, so the elevons cannot rotate the aircraft during takeoff roll.

Initially, the landing gear was set up so that the aircraft sat at a positive angle to the ground, allowing a zero rotation takeoff, much like the B-52. The second DarkStar was reconfigured to taxi at a negative angle of attack. Takeoff is now initiated by extending the nose gear to give the aircraft a three degree positive angle of attack.

http://www.fas.org/irp/program/collect/darkstar_01.jpg



The second DarkStar was flown successfully at Edwards AFB on June 29, 1998. It remained in the air for 44 minutes and achieved a planned altitude of approximately 5,000 feet. The entire flight, start to stop, was automated.

UAVs will be used for missions where a human pilot would be placed at risk, or where limitations of the human body would be exceeded. Ideal

uses would be as intelligence gathering devices, as missile defense platforms, or as pilotless attack aircraft. Besides these obvious real-time military uses, UAVs will also find a place in civilian surveillance, such as oil pipeline observation and highway patrol, or perhaps in mail delivery systems.

UAVs must carry special payloads through challenging flight regimes while remaining stealthy. Such constraints frequently force designers to create unique and oftentimes exotic platforms. Despite their odd look, these aircraft can usually be made into stable radio controlled models. DarkStar on the



<http://www.fas.org/irp/program/collect/darkstar_04.jpg>

slope? Hey, it could happen!

A motion picture of the first flight of DarkStar can be found on the Lockheed Martin web site. You can download the movie as either a Quicktime MOV (3.5MB) at <<http://www.lmco.com/video/lm1/>

may96/2uav.mov>) or a Windows AVI (6.5MB) at <<http://www.lmco.com/video/lm1/may96/uav.avi>>) file.

Suggestions for future columns are always welcome. Please drop us a note at P.O. Box 975, Olalla WA 98359-0975, or <bsquared@halcyon.com>.

Resources:

Dornheim, Michael A. Many changes made to DarkStar. *Aviation Week & Space Technology*, July 6, 1998, pp. 26, 29.

Fulghum, David A. DarkStar beats problems, scores successful flight. *Aviation Week & Space Technology*, July 6, 1998, p. 25. ■

GORDY'S TRAVELS

A New Stop Watch!

The Accusplit Alliance 620

by Gordy Stahl
Louisville, Kentucky
GordySoar@aol.com

Picture this:

I am standing on the landing line at Visalia. The flight is only a 4-minute.

I had launched right into big lift and skied out immediately.

My timer has my stopwatch and tells me there are 2 minutes left.

I better get down.

Then, he says, "1 minute!"

I zoom down to get into approach height.

I hear the 30 second beep, and circle a few times.

With 15 seconds left, I'm coming in on final.

The timer counts me down with the beeper counting with him.

The nose touches down with the final beep.

We both jump for joy, cuz I got some good landing points, too!

I'll be in the top 100; with luck the top 50!

Not bad for the third flight on my Psycho!

Then, the line judge walks up to check the clock and mark my score

...2 minutes, 19 seconds!!!!

WHAT?????

Yep, the watch glitched. Boy, did I get a good deal on that one! Well, that's what sent me on this trip of discovery. Basically, there have been two watches that are considered the one to have: Chronus and the Seiko programmables. Each has buttons on the top and a dial to program preset times. I feel that the Chronus has really poor buttons/switches, which have been known to cause problems. The Seiko has nice, positive 'click' type button switches, but it is about \$80.

I hoped there was an alternative, and I found one: Accusplit Alliance 620. It

retails, delivered, for under \$30. It has 'click' buttons, and a 2 year, 'no proof of purchase', warranty. A programmable dial is on the front and can count up or down; you can toggle between up and down while the count is in action. That means you count your time up; the last minute can be down. Sidewise, it's 3 1/4" tall, 2 1/2" wide, and 5/8" thick.

The 620 beeps at 30 seconds, and again at 3 seconds (for three beeps); the last beep is a long one. The clock continues to run. This is kind of nice, because the others beep at ever minute, then every ten, and then the last ten. Those last ten can be very annoying to say the least, and distracting at a time when one really needs to concentrate.

The 620 has a split function with memory up to ten splits. Let's say you are flying HLG and you want to record every launch and the aggregate time, as well. Your timer would hit the split button along with each stop. The watch would store the previous times and can be recalled. How much time was the fourth launch? No problem, just cycle through the splits until you get to



split number 4 and there it is!

This watch has some other neat functions, too. But the point is, it appears to be reliable, and specifically functional for our tasks... And, at a reasonable price! I got three of them! (Not cuz I figure they'll break, but chances are I'll lose them!)

You can contact Accusplit at 800-965-2008 (www.accusplit.com) for a dealer near you. Ask for model number AL620M10T. Tell 'em, "Gordy sent me!" ■

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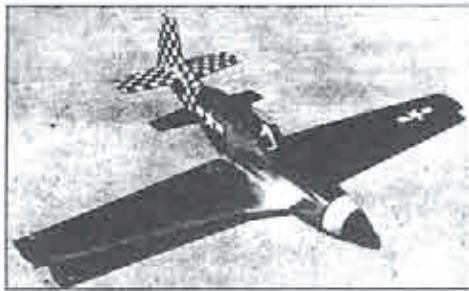
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The Molded P-51D. Looks fine, but didn't quite deliver all we wanted! See text.

FIGHTING FOAM & HEAVY IRON

VOLUME 3, NUMBER 1

By David M. Sanders
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Capistrano Beach, CA 92624
(949) 248-2773
daw1@access1.net

THE HOLY GRAIL SPECIFICATION...

Whel! I've been away from the keyboard for a little while, and the following will tell why...

After making EPP foam airframes for about three years or so, we here at DAW decided we wanted to try something a little different in the vein of tough aircraft. There were a few problems with the foamie concept we wanted to address based on feedback from customers of our factory, as well as what we'd heard through the foamie maker's grapevine. All this formulated into what we now think of as the 'Holy Grail Specification' for model aircraft manufacturers; or at least for the ones trying to make impervious, quick-building, high performance models. Here's the specification:

- 99% crash proof... EPP construction is the closest human civilization has come yet - Thanks, Pat Bowman! Composites do not live up to this requirement at all.
- Structural stiffness... EPP needs outside help for this in the form of beam elements, rigid plastic reinforcement or tensioned skin. Composites have their stiffness built-in.
- Unlimited design freedom... EPP limits you here, but composites do provide this. It's difficult to create a super-streamlined airframe in EPP, as its nature demands large sectional areas and the finish can only be so smooth.
- Plug and Play... This is one place where EPP is sorely lacking, even though by historical standards it's actually quite good. Composites can offer this, but not always. This is largely dependent on the manufacturer's prefabrication efforts.
- Low Cost... EPP is good in this regard, as its longevity amortizes the cost of the model well, even under extreme duress. The composite plane is expensive from the start and always seems to have one foot in the grave.

We decided that a hollow molded, thermoplastic plane might be able to do all of the above, but it didn't quite go as planned. Here's the story of an R&D project that

offered devilish temptation and catastrophic failure all in one package!

Years ago, there was what could be termed an attempted revolution that occurred in the slope soaring community by a few separate groups. One was Bob Martin's 'Duralene' concept. Bob actually worked out molded plastic fuselages for three famous slope designs: the venerable SR-7, the Coyote, and the slightly more obscure Katie II. The blow molded polyethylene Cheeta was developed by another manufacturer and sold for quite some time as well, but never was quite as big a hit as the Bob Martin designs. In addition to these, other companies tried the molded plastic concept, too, one of which being Cox with their Ridge Hawk design, and also Astro Flight who came up with an approximately 1/8 scale ASW-17 with a rotation molded fuselage of polyethylene. Of all these designs, the SR-7 in particular was a real winner if you had the hills and the air to support it; it was no lightweight, but in the right conditions could absolutely dominate a slope. This was and still is one of the most impressive slope designs I've personally ever seen; fast, acrobatic and really pretty sharp looking for a non-scale design with the stylistic flavor of the Northrop P-5 Freedom Fighter. The Europeans had also tried the concept, but the models were real 'Tinker Toy' in nature.. Not the serious PSS/Scale machines we were looking for.

The single drawback of all these designs was that the wings were either stick framed, sheeted foam or molded foam of which none came anywhere near matching the toughness of the plastic fuselages. We'd always thought it was a shame that they couldn't have wings and/or tail surfaces of the same materials as the fuselages. Also, particularly in the case of Bob Martin's designs, the fuselages themselves were fantastically heavy, which we'd always found to be a bit of a disappointment. This wasn't true across the board, though; the blow molded Cox fuselages were extremely light and quite tough.

Blow molding and rotational molding were the processes to choose from. Rotation molding in particular is a nice process, as its tooling costs are reasonable (by industrial standards) and it offers amazing flexibility with material choice and placement in the finished parts. Contrarily, the cost of blow molds is similar to that of injection molds (in the tens of thousands of dollars) and offers less material placement control.

So off we went in high spirits to try and create something that would give the total satisfaction sought by the Holy Grail Specification: a 100% molded, thermoplastic airplane. We decided to start with a known quantity in the design department: a 1/12 scale P-51D. This would provide a mid-sized model offering a good baseline for weight/volume ratios, as well as flight/structural performance. Stuff like canopies were off-the-shelf items, too. Also, we'd always wondered why no other manufacturers had approached a PSS concept, and to us, this was the number one omission made by all those who had come before.

The first step was to create plugs for all the

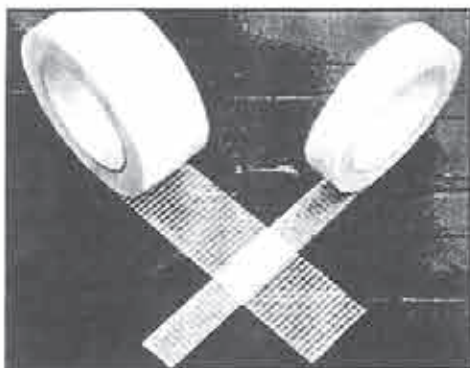
parts. These were hewn from solid blocks of poplar with fillets added to the fuselage by way of plywood root ribs and polyester filler. The plugs were then completely finished so that plaster patterns (duplicates of the final molds) could be pulled from them. This process is familiar to anyone who has created molds for glass planes. This was done for the wings, stabs, fuselage, hatches and everything. My blisters and cuts by the end of this stage were numerous!

The finished patterns were taken to the foundry and sand cast in aluminum. They day we went and picked them up was a magical day... Here were the molds in solid aluminum. All that was required was polishing of the mold cavities, light machining of the flanges for a good seal, installation of clamps and placement of alignment pins. So far, so good. The first of many large quantity checks were written at that point.

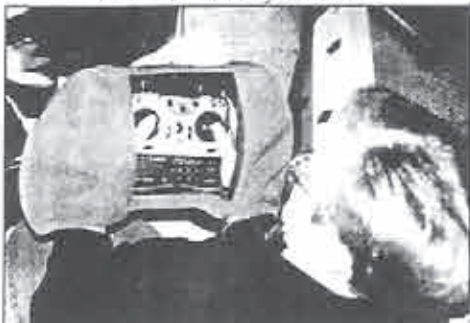
Next was the production shop. All the molds were mounted on welded steel frames to be placed on the platen of a rotation molding machine. The object of the game is to rotate the molds in two axes simultaneously - inside of a bedroom-sized industrial oven. This is accomplished by the Rube Goldbergesque rotation molding machine, which rotates a spinning platen at the end of a long, barbecue spit-like arm. One end of the arm is mounted to a pylon on the floor and the whole works - in motion - can be swung in and out of the oven. The molds are charged with powdered or liquid plastic resin of your choice (within some limits) and run through the cycle; about ten minutes in the oven and a slightly shorter cooling cycle outside. After this, the machine is stopped, the molds opened, the parts removed, and the molds recharged for the next cycle.

We were turning out pretty nice parts with the exception of the ailerons, which were just too darn small to work and were constantly coming out 'burned'; the plastic would be brown and bubbled in the mold cavity. We elected to use balsa for the ailerons... The first compromise had been made; the stabilizers were about as small as we could go. The wings had some problems, too. The came out very straight but were 'oil canning' out in the middle of the chord, particularly on the bottom, less curved side. This ultimately spelled the death of the project, as to get the necessary dimensional stability the wing panels had to be run well overweight, making the plane impractically heavy. The sloppy wings ruined flight performance, and even at the best weights we could achieve, turned out to be quite delicate. This was a real shocker... We'd never expected that at all. The whole time this was going on, there were other problems to solve which were indeed conquered all the way down the line. For instance, there's no glue that will make a strong structural joint on polyolefin plastics (like polyethylene and polypropylene), so mechanical fasteners must be used wherever parts are joined.

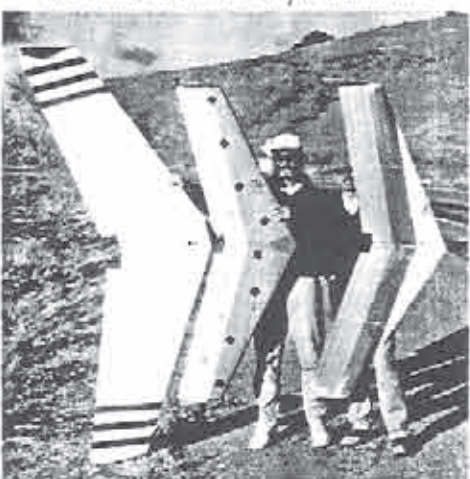
Although the molded plane project didn't yield a fully functional airframe, it was a good, albeit expensive, learning experience. Our conclusion was that the rotation molding process could turn out some darn



BASH Enterprises combat tape. 25% lighter than ordinary 3M Super Strength and features bidirectional reinforcement.



Mongo Mit also by BASH Enterprises. Simple and effective protection for your transmitter and hands in extreme slope conditions.



Large and small Mongos by BASH Enterprises offered in two sizes: 72" or 96" spans. See text.

nice fuselages and our future plans are to offer some models utilizing molded plastic fuselages with foamie style wings. Having the fuselage molded eliminates a lot of work for the builder, as it doesn't even require covering.

Also, by installation of cleverly designed and placed hard points in the fuselage, the radio gear just bolts right in. This method of making the models will also allow great freedom in picking scale subjects, as heavily filleted and curved prototypes can now be easily duplicated.

The moral of this story? Be careful what you wish for, 'cause you might just end up with a three-headed, multi-tentacled, cash eating monster! We were convinced this thing was going to work, but you just never can tell until you test 'em. Sure looks sharp though, doesn't it? Hmmmm... I

December 1998

wonder if... Heh, heh, heh... We haven't said 'die' yet!

BASH ACCESSORIES & COMBAT ACTION VIDEO

The Bay Area Slope Heads (BASH) have decided to start their own company to offer some of their favorite home-brewed items to the public. One of their own, Bill Swingle, is also a frequent RCSD contributor. Here's some of the latest stuff they've got to offer...

Super-duper BASH reinforcement tape. They found a source for this stuff somewhere, and Roy Axford sent a roll down for me to test out. Verdict? Works great! The filaments are bidirectional, which can actually allow a reduction of taping in some areas of some designs, and the stuff is 25% lighter than ordinary 3M Super Strength Tape. Might want to give the BASH guys a call and get a roll of this stuff to try yourself; it'll definitely save weight and has proven exceptionally strong. One note on using it... We found the film matrix to be extremely slick, so be sure and sand it a little; then spray with contact cement before covering with iron-on film. If you do that, the film will stick great.

Next is the Mongo Mit. Roy sent me one of these, too, and it also works exceptionally well. Just place it over your transmitter and you've protected it from the elements, as well as shielding your hands from the chilling, drying effects of the wind. I found the Mongo Mit easy to use and highly functional.

The transparent vision panel on the front allows easy visibility to all your transmitter functions, too. Getting your hand inside after launching can be tricky, but if you practice it for a few minutes you get to where you can do it reliably every time.

Finally, the Mongos. These are giant, double-size flying wing combat planes. They're selling kits for them and they're nothing any more exotic than any other

typical combat wings out there; they're just huge, is all! 72 or 96 inch spans!! Flight performance is very nice and the 96" one was used as a camera plane for Doug Hertzler's recent video release 'California Combat'. The more recent 72" model is particularly well suited to light lift with a wing loading under 5 ounces per square foot. Wanna' be the 300 pound gorilla at your slope? These are the ticket!

Which leads us to the California Combat video... This is probably the best R/C Combat flying video we've ever seen yet. It's entertaining, well edited and mixed, and has some awesome in-flight video taken with the 'Mongo Cam' (an extremely unfortunate camcorder). Here you get to see what it actually feels like to your plane when you take a hit in combat... It'll definitely make ya' grit your teeth. This would be an excellent video to show a combat neophyte or dis-believer!

Combat tape, Mongo Mit and Mongo Kits:
BASH Enterprises
2887 Westchester Drive
San Ramon, CA 94583
(925) 829-6860 or (209) 995-9500
<wkauff3@aol.com

California Combat video:
Doug Hertzler
3735 West Olive Ave.
Fresno, CA 93722
(209) 277-1622
<doug@theworks.com

Well, that's all for this month. I'll have some more good stuff next time, and I'll try to stay a little better on schedule! 'Til next time, keep 'em bouncin'! ■



The Curtiss P-40 Warhawk is right standard size radio equipment.

This fuselage worked fine in flight (it was very fast). This plane can be enjoyed by the radio sport or combat flyer with gear equipment. It is very well looking and has been turning heads at the slope. Again, this kit, as with all of our kits, comes with a comprehensive manual and all the hardware necessary to finish your P-40.

ME P.1111 FLYING WING



The all EPP foam and balsa wood construction make this plane virtually indestructible. The 4° degree sweep, gives it a low profile, great maneuverability, and a quick recovery rate. All of this is ideal for combat conditions. Requires a radio with mixing or a separate mixer.

Kits: \$59.99 each plus \$5.00 shipping
California residents add \$4.05 (7.75% sales tax)

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HAVE SAILPLANE, WILL TRAVEL!



Photo by Charles Rumele - Buena Vista Street from the cockpit of a Stearman biplane.

(Left) Photo by Phil Pepin - Flying at Plainfield on reclaimed strip mine lands.



By Tom H. Nagel
904 Neil Ave.
Columbus, OH 43215
tomnago@freenet.columbus.oh.us

This column is dedicated to soaring vacations. This month, I will be sharing some neat places to fly in Ohio.

Some Places are a Destination Some Places are Just a Trip

Most folks don't think of Ohio as a vacation destination. John Denver wrote:

"Saturday night in Toledo, Ohio is like being nowhere at all."

(He apparently was not there during the Weak Signals annual RC show.)

The drivers on Ohio interstates all look like they are trying hard to get somewhere else, somewhere scenic like Cape Cod or Key West or Muncie. Maybe they ought to pull off the freeway for an hour or so and take a sailplane break.

So, if you find yourself driving through Ohio on the way to someplace glamorous and exciting (or someplace your boss wants you to be in the morning) here are three places just off I-70 where you can get a quick slope fix. Starting from the west:

1. Buck Creek State Park, Springfield, OH (Map 1)

From I-70, exit onto US Route 40 just east of Springfield. Go about two miles west on Rt. 40, and then turn north on Bird Road. Follow Bird Road into Buck Creek State Park, drive along the south side of the lake, and then follow the signs around to the park headquarters.

Park in the big lot below the park headquarters; there are rest rooms, grills, shelter-houses and water available at this site. From there, it is an easy walk south along the road on top of the dam, out to the best

of sight down the length of the dam.

The Army Corps allows RC flying on the site, and indeed there is an informal (non-AMA, non organized) power RC site on the flat field upwind from the dam. You can easily see it from the top of the dam. Usually, if it is windy enough to slope, it is too windy for the power guys to be there. If they are on site, coordinate your frequencies, or pass on flying. (I use my son on a mountain bike as a frequency courier.)

Other than talking to the power guys, there is no need to check in with anyone.

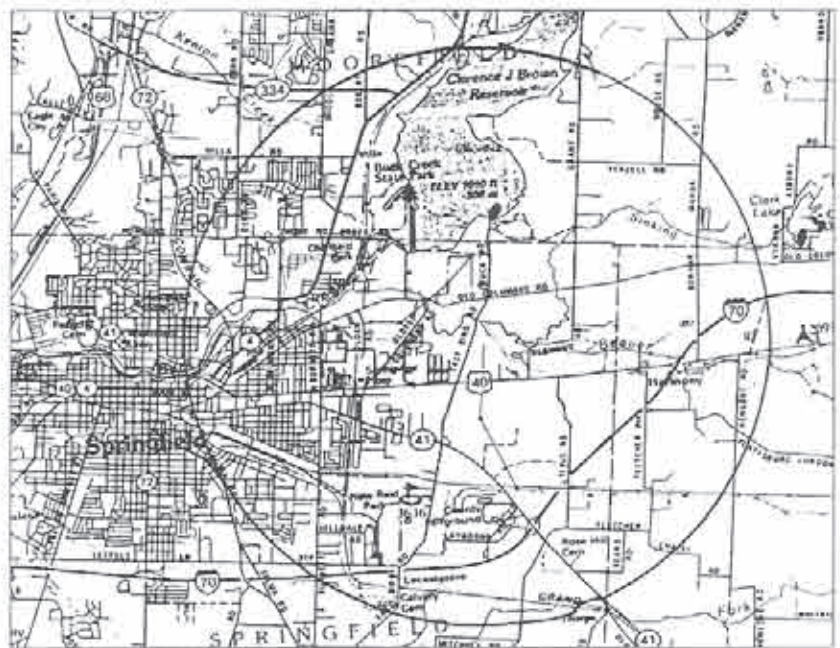
Metal guardrails on top of the dam require you to land on the grass face of the slope, or at the bottom.

Diversions for the family include swimming, biking, hiking, boating and fishing. Or, watching Dad make a fool of himself on top of the dam.

2. Newark, Ohio—Buena Vista Street (Map 2)

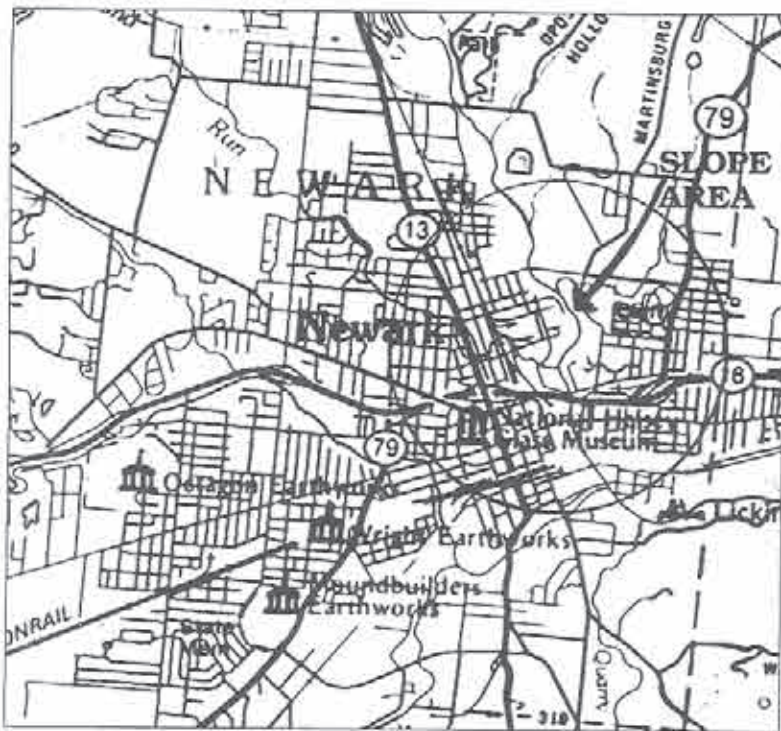
Just 45 minutes east of Columbus and 15 minutes north of I-70 lies a unique urban slope site in the little city of Newark. The Buena Vista Street slope is a bowl, and will work on a variety of wind directions from West-Northwest to almost full south winds. Southwest seems to work best.

Take Ohio Route 13 northbound off I-70, through downtown Newark; Ohio Route 16 is a small expressway that runs east-west through town. Take it east a very



Map 1
Ohio Atlas & Gazetteer™
"© Delorme, Yarmouth, Maine"

Delorme Mapping Co., Box 2989, Freeport, Maine 04032 has kindly granted permission for use of their Ohio maps for this article. They publish very useful and detailed "back roads" map books for all but 5 states, which they are in the process of mapping: Hawaii, North Dakota, Connecticut, Wyoming, and one more. I highly recommend them for slope trips as well as hunting, fishing, camping, canoeing and, above all, avoiding having to break the male taboo about asking for directions. Jerry ordered maps for Texas and Oklahoma by calling (800) 227-1656, ext. 5900, and the maps arrived in 2 days!



Map 2
Ohio Atlas & Gazetteer™
© Delorme, Yarmouth, Maine

little bowl, but are not known to be aerial combat pilots. I once hit Paul Wiese's Foameron with my Zagi here, but it was an accident. We both apologized and flew on.

3. Plainfield - Ohio's "Big Hill"

(Map 3)
John Denver also wrote, "Daddy Won't You Take Me Back to Muhlenberg County - Mr. Peabody's Coal Train Done Hauled It Away." Well, Plainfield is where he dumped it.

go there" or "Looks like a good place to strip mine," depending on which Indian you talk to. The Big Hill is about a half hour's drive away from either I-70 or I-77. Plainfield has a church, a post office and a general store, so if you want amenities, stop somewhere else first, and take your amenities with you.

From I-70 take either Rt 93 or Rt 83 north to Oswego, and then Rt 93 north to Plainfield; just south of Plainfield you will see the ridges ahead of you. Ohio Rt 541 intersects just south of town; take Rt 541 east about a quarter mile, and you will find the coal company gravel road coming in from the north. Go explore.

From I-77, take the North Salem exit and follow Ohio Rt 541 west.

(Thanks to the Newark Bunch for inviting all us flatlanders to go sloping and for showing us Buena Vista and Plainfield.)

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@freenet.columbus.oh.us for gentle editing and suggestions. Tom

short distance to the Buena Vista Street exit. Drive north through an unlikely looking neighborhood that includes a number of large Victorian homes gone to seed, and a bizarre Noah's Ark of a fishing boat stranded in a hilltop side yard. When you find an open slope on your left, you are almost there. The City of Newark maintains the top of the slope as a public area, and there is off-street parking just a couple of hundred yards ahead.

The "Vista" at Buena Vista is not entirely "Buena." At the bottom of the slope you will see a bike path bordering the Licking River; and across the river is the Owens Corning fiberglass plant. When the plant is cooking, you can fly your plane and glass your fuse at the same time. Some of the guys make a contest out of seeing how long they can keep their planes in the air without breathing.

There is a steel guardrail at the top of the slope (to deter four wheelers and drunks, no doubt) and the rotor can be fierce when the winds are up. If you are worried about landing, go high and across Buena Vista Street, and land in the farmer's field east of the slope.

Chuck Rumele's photograph, taken from a vintage Stearman biplane, shows Buena Vista St. running north just ahead of the leading edge of the wing, the grassy landing zone, the bowl shaped slope, the Licking River, and the scenic fiberglass plant.

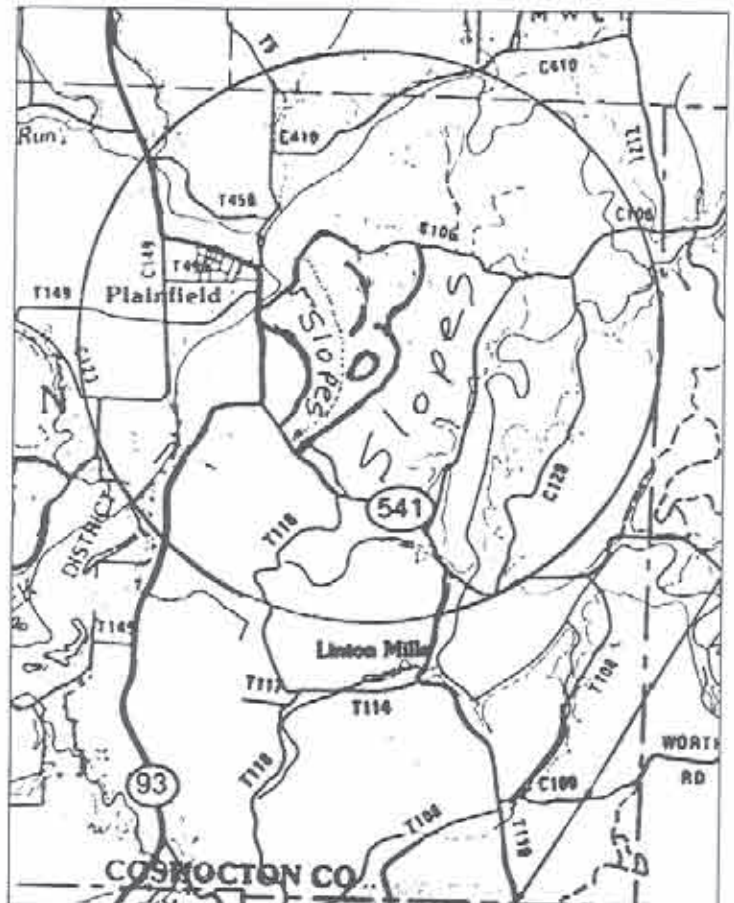
The local fellows who fly here are a wild and friendly bunch; they have no frequency control, since they all know each other — so be sure to ask them what channel they are on before you launch. The locals fly everything from light balsa mosquito class hand launch planes up to full house aerobic slope racers on this

Plainfield lies in the northeast crotch of the intersection between I-77 and I-70 in eastern Ohio, strip mine country. The Peabody Coal Company has reclaimed a large area southeast of the little village of Plainfield, leaving a number of huge ridges and bowls which are grass-covered and flyable from virtually any wind direction. You just drive around on the coal company's gravel road until you find a slope that you like.

Some of the ponds are marked "No Trespassing." It is best to stay out of those areas. But Peabody has a history of tolerating polite trespassing for flying purposes. As far as I could see, they have no one working on the site, just acres and acres of grass and grasshoppers. Peabody Coal will not give written permission to fly, and by all accounts will not prosecute, either. So if you fly at Plainfield, use courtesy, good manners and common sense. And if the man asks you to leave, go quickly and quietly.

Plainfield is in Coshocton County. Coshocton is an American Indian word that means either "No reason to

Map 3
Ohio Atlas & Gazetteer™
© Delorme, Yarmouth, Maine



TECH TOPICS

Dave Register
Bartlesville, Oklahoma
RegDave@aol.com

Foam Cutting Wires & Power Supplies

This month, I'm probably tromping in areas best reserved for those more expert than myself. That's never stopped me before, so let's go.

We've talked about designing and building sailplanes from scratch and, last month, gave you some information on people to contact if you've got a design and haven't the equipment to cut cores and bag wings. This month we're going to kick around some ideas for those of you who are putting this type of equipment together for yourself. If you are already set up, this month's column isn't too relevant, but following the discussion might be informative.

Commercial Equipment

As far as I'm aware, the only commercial foam cutting setup readily available is the Feather Cut system. This is available from several outlets (Composite Structures Technology at <http://www.cstsales.com/>, Aerospace Composite Products at <http://www.acp-composites.com/> and NorthEast Sailplane Products at <http://www.ncsail.com> are three that come to mind). This uses a clever drop arm type system and can be purchased with several different bows and a power supply. I've not used one of these systems, but several guys in our club have them and they work very well. The Compu-Foil program draws templates compatible with this product. Expect to pay - \$270 for a package that includes the drop arm assembly, 28" bow and power supply. Add \$34 for the 40" bow and \$39 for the 52" bow.

Semi-commercial Equipment

A source for a really good cutter that you can build yourself with some wood shop skills is available from Del Bregman. Del has been at this for many years and will custom cut cores for you (as mentioned last month). However, he'll also send you the plans to put your own system together (5 bucks for his copying cost and mailing). I've got a set of his plans and they are very well done. A number of folks have built this system and have excellent success with it. You can contact Del directly for more information (e-mail: Dbregman@aol.com, or regular mail: Delmar Bregman, 6054 Emlyn Ct., San Jose, CA 95123, Ph (408) 629-1325).

But suppose you're cheap like me and want to try to work this out on your own. If you have some experience with wiring and materials, it's not too difficult. Before plowing on any further, however, we need to stop and think about what we're working with here (Brief safety discussion ahead!).

Effects of Voltage

Foam cutters work by heating a wire to a sufficient temperature to melt the foam. The heat source is electrical and can be very unforgiving of any mistakes you may make. Although a power supply for the bow is low voltage, there are conditions where that can get you. You'll also have

110V in the system and that can REALLY get you.

It isn't the voltage that kills. It's the current. Fibrillation of the heart begins somewhere in the 100 mA region (that's 1/10 of an amp). Most of the time your body presents enough resistance so that low voltages can't drive that much current. Most of the time if you're sweaty or wet, the current will travel through your skin. Every now and then those conditions don't always work out and then you're in serious trouble.

Having caught 1200V from right pinkie to left ring finger once, it's an experience you NEVER want to encounter. It's like a huge piledriver slamming through your chest. And you know nothing is working anymore. It seems to take forever falling to the floor and, if you're lucky, the impact jump starts your heart again. If not... Well, you'd be spared all these 'Tech Topics' columns at least. 'Nuff said. Please be careful.

Cutting Wire

I've used Chromel-A for many years, so I was somewhat surprised to learn the error of my ways through a discussion on RCSE last year. Turns out most home-made cutters are using stainless steel wire of around 0.016" to 0.024" diameter. Since most of these folks are on the East or West coast of the US, this wire was readily available in fishing tackle stores as 'leader wire' in those areas.

Leader wire is typically used in salt water fishing. Took a while to get the idea across to the RCSE brethren that here in the mid-West, we really don't have a lot of salt water and SS leaders are almost impossible to come by.

So after a bunch of searching around, here's where anyone can easily get stainless steel leader wire of the proper dimensions:

Cabela's Spring 1998 Annual Catalog
Mail Order Number: 1-800-237-4444
Page 26 - Imperial Trolling Wire
(available in 250 yd. spools)

Part No.	Lb. Test	Dia.	Price
AJ-11-0620-010	10	0.010"	\$7.69
AJ-11-0620-016	16	0.013"	\$9.29
AJ-11-0620-020	20	0.016"	\$10.99
AJ-11-0620-030	30	0.020"	\$13.49
AJ-11-0620-040	40	0.023"	\$16.49
AJ-11-0620-050	50	0.025"	\$19.99

Bass Pro Shops

Offshore Angler Catalog, Summer 1998
Mail Order Number: 1-800-463-3746
(Please note that the first number '27' may refer to their 'Saltwater Specialists' catalog. If you look these up on their website, they'll appear with a starting # of '38'.)

Page 54

Offshore Angler Leader Wire

Item No.	Dia.	Price
27-400-565-02	0.011"	\$3.99
27-400-565-03	0.012"	\$4.39
27-400-565-04	0.013"	\$4.89
27-400-565-05	0.014"	\$5.69
27-400-565-06	0.016"	\$6.49
27-400-565-07	0.018"	\$7.29
27-400-565-08	0.020"	\$8.59
27-400-565-09	0.022"	\$10.19

Page 54

Mailin Stainless Steel Leader Wire

Part No.	Diameter	Price/Qtr. lb.
27-481-669	0.012"	\$8.89
27-481-670	0.013"	\$9.19
27-481-671	0.014"	\$8.49
27-481-672	0.016"	\$9.19
27-481-673	0.018"	\$7.99
27-481-674	0.020"	\$7.79
27-481-675	0.022"	\$7.49
27-481-676	0.024"	\$6.99

I've used the 0.016" wire from Cabela's and it's worked very nicely. Much nicer than my old Chromel-A, so that worked out very well. I've also tried the 0.018" Mailin and it works OK, too. But I like the 0.016" better.

Power Supply

Many years ago at JPL I was able to buy a surplus DC power supply and a 5 amp Variac. Turned out this power supply is a 36V, 7A capable, so I can just about cut

Announcing the FIRST ALL LASER CUT Sailplane Kit!

The precision of CAD-CAM Laser cut parts are far superior to previous methods of designing and manufacturing. Parts fit so well, it makes this complex kit easy to assemble. The strong, full



D-Box, double shear-web wing allows for super winch launches; the large flaps and ailerons add to the great SD7037 airfoil performance.

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Wing Span	118 in.
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Airfoil	SD7037
Aspect Ratio	13:1
Fuse. Length w/Rudder	53.25 in.
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rocks with it. 'Big Bertha' still works fine, but the replacement cost is probably ~\$300, so let's try another approach.

First, let's do a little electrical engineering. Since I like that stainless steel wire so well, let's see what power requirements it takes. First stop is a materials database out on the Internet called MatWeb (<http://www.matweb.com>). This is a free industrial database and has many different materials listed there. Among them is 300 series stainless steel.

An important number for any metal used for heating is its resistivity. From this you can calculate the resistance of any length and diameter of that material. One thing to also note is that the resistance of a heated wire actually increases as temperature goes up. That number is also out there on Matweb and it tells you that you need a little extra current to get it started, but that will drop off some as the wire comes to temperature.

Using the resistivity of 300 series stainless (0.000072 ohm-cm) you can calculate that 36" of the 0.016" Cabelas leader wire is going to have about 5.1 ohms. You can also find that at a temperature of around 300F, it will have a resistance of around 6.2 ohms.

Guess what? When I measure the room temperature resistance of the leader wire, I get 5.07 ohms for a 36" piece. At cutting temperatures, it looks to be around 6.3 ohms. Ain't science wonderful?

Now, from some experience over the years, I want to have about 1-1/4 watt/inch capacity in the wire. I usually cut at lower settings, but that capacity allows a fairly rapid cut-off for hogging out blanks. If you work with all of these numbers a bit (watts for power, amps for current, ohms for resistance and volts for voltage):

$$\text{Power} = \text{Current} * \text{Current} / \text{Resistance}$$
$$\text{Voltage} = \text{Current} * \text{Resistance}$$

You'll need about 3 amps for the 0.016" wire and about 4 amps for a 0.022" wire.

To complete this side of it, I'll also require that I want to cut up to 48" cores. Using the resistivity numbers for 300SS, we find we'll need around 20 volts for the 0.016" wire and ~15 volts for the 0.022" wire. So it looks like we need a supply capable of providing ~24 V at 4 A to cover all the bases.

A 24V transformer of this capacity will do the job nicely (back to this in a minute). But how do you vary the voltage to set the specific heat range you want? Well, the Variac mentioned earlier is ideal for this application. But if you think about this a bit, the actual power required isn't very high. It's around 100 watts, which is the power of a normal light bulb. From a 110V source (household outlet) that's going to require less than an amp of current. So a 5 amp Variac is pretty much overkill for this project.

Several folks on RCSE have mentioned using a standard light dimmer for this type of application and after working through all the details, that looks OK. You can pick one up for dimming lights for around \$6 at your local hardware store, so we've got the cost down there pretty well. A simple

circuit would then have the light dimmer set up to plug into a wall outlet (with ground fault protection!!!) and the wiring from the dimmer goes to the input side of the transformer. The output from the transformer then goes to an appropriate connector to your bow. Actually, this is exactly the wiring setup recently published in the July issue of *Model Aviation* by T. Michael Jennings and I refer you to that issue for clarification of things, as well as additional safety comments.

Only one problem left. Where the heck do you get the transformer? This is the kind of stuff that drives me nuts because most of the articles on setting up cutters simply mention a transformer of this type, but no idea where to get it (a lot like the leader wire episode!). Unless you live in an area with a large retail electronic supply house, you can't find it conveniently.

You can find a 24V transformer at just about any Radio Shack, but it won't work because it's 2A limited. 24V transformers are also used to actuate relays in HVAC systems, but again are limited to 2A. There are higher power ones up to 4A, but they are usually special order and have multiple input taps for heat pumps. They'll cost you ~\$90. Go to your local heater-A/C supply store if you want to go this route.

But the Internet comes to the rescue. There are several electronics supply houses with web sites. The one I use is Mouser Electronics. They have locations in California, Texas and New Jersey. They have an 800 number for US orders (800-346-6873). You can also order direct on their secure server. You can easily look things up on their website (<http://www.mouser.com> - Adobe Acrobat 3.0 helps to view things conveniently). Lo and behold, under the transformer section they have a single tap, 110VAC input, 24V - 4A output (100VA) transformer for \$25. It's a Magnetek-Triad Quick Pak, part number 553-P8-24 in catalog #596, page 257. Just what you need, and a bargain at that. With a \$3.35 S/H charge added on, it shows up at your door (UPS ground) in 3 days. I ordered mine on a Friday morning and it was sitting on my doorstep Monday evening when I got home. A few connectors from Radio Shack, and it was cutting foam that night. Total cost ~\$50.

So, now you have all the components available to make an inexpensive power supply. You've also got a proven wire type that matches that supply perfectly. And, most important, you know EXACTLY where you can get all this stuff and EXACTLY what it's going to cost you. And, since we did the math and then the verification on the actual wires, you know why it needs to be designed to this capacity.

Now what? Details of the layout and the bow? Check in next month. Cheaper than any of the other bows I've seen and just as good. Plagiarized from an old RCM publication to boot!

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6th place team, Claus Borst's 1/3.5 Dornier DO27 and Rolf Rausch's 1/2 Standard Libelle, both giants and both beautiful flying scale models.

Warm Food & Hospitality

On Friday and Saturday (Sept. 11-12), a hot lunch was served in a covered clubhouse area, and a delicious German dinner (Bratwurst, etc., and excellent beer) was to be had, to the tune of an eleven piece brass (ompah-pah polka and waltz) band!

Unlike most competitions and fun-flies here in the USA, the Germans seem to have a completely different attitude about model airplanes. The art of flying miniature aircraft is called a "sport" in Germany and carries with it a respect and viewpoint that we would do well to try to emulate here in the USA! Perhaps this is because the flying of model airplanes is a family affair. Playgrounds and club houses are to be found everywhere at model flying fields. Wives, girlfriends, children, dogs and pilots all have a merry time of it and enjoy the flying!

All sorts of folks seem to like



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This is the largest sailplane flown at the Seglerschlepp event - a 1/2.5 scale ASW 27. It HAD to weigh 20K or less. It was flown to 4th place by Michael Franz, last year's winner. A 1/3 sized Wilga towed it up just fine!



Seglerschlepp

As many of you know, the Fayetteville aerobic event was postponed because hurricane Georges clobbered many pilots. As a result, they couldn't attend. I still get the impression that very few scale sailplane pilots are flying aerobatics. What about you guys with large slopes - why not hold an aerobic contest there? Flying the stunts at eye level would be spectacular! Sooner or later, someone will give it a try!

If tearing around the sky is not your thing, what follows might be more to your liking.

RECIPE FOR SCALE ENTHUSIASTS

Picture 32 gorgeous sailplanes up to 1/2 scale; add 32 beautiful LARGE towplanes; add 64 of the top German pilots; put all of this into a large, beautifully manicured field; sprinkle with generous portions of hospitality, enthusiasm and sportsmanship and let all of this happen for two days - what you will have is the wonderful D.M.F.V. Seglerschlepp (airtow) team event, which took place in Oberhausen on 11-12 September.

SUPERB SCALE AIRCRAFT

While all of the sailplanes and tow planes were scale, some of these aircraft were of museum quality with complete cockpits, instruments and even landing lights, strobe lights and one with fully functional slats! Add to this scale smorgasbord, over 100 airtow flights during this very interesting two day team event and mix with a spicy combination of calm, windy, sunny and rainy weather, and you have one of the most delightful and interesting events I've ever been privileged to attend. But there's more!



Thomas Gleissner (2nd place winner of the Akro-Cup this year) poses with his 1/3 Duo Discus.



Some of the very interesting scale birds waiting to get airborne.



model airplanes in general. I was told that there was a model airplane air show held near Berlin this summer which drew over 80,000 spectators!!!! Yes, I said eighty thousand!!!!!! This air show consisted of sailplanes, motorplanes of all sorts as well as jets – there was something for everyone!

This Seglerschlepp in Oberhausen was no exception! The warm hospitality of the German model airplane scene really has to be witnessed to be fully appreciated!

SPORTSMANSHIP

Although it rained every day, each team of tow pilot and sailplane pilot completed three rounds of superb flying to the delight of all concerned. A keen spirit of friendly competition prevailed throughout. When a pilot made a particularly good landing or towline drop (more on this later), applause rang out! Serious competition with warm sportsmanship – that's how to do it! Everyone was having FUN!

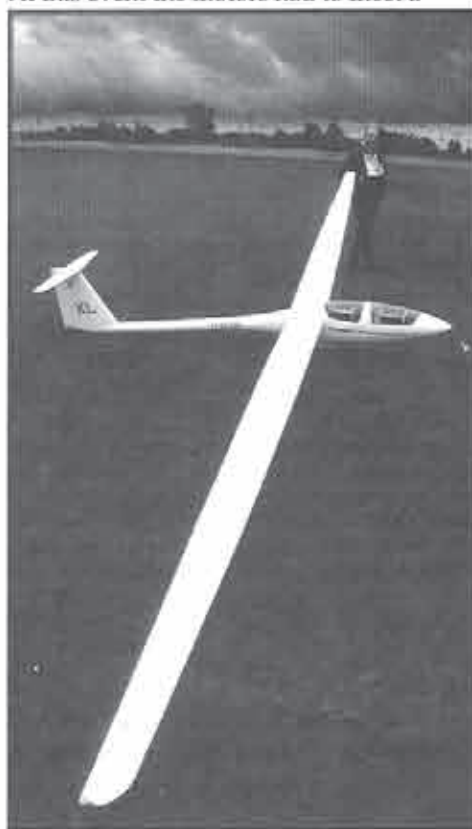
SUPERB PILOTING

We saw only two bad landings out of almost 100 flights (one sailplane landed in a near-by lake) and one towplane had a premature motor cut. There were no crashes! The level of flying was superb and watching this, one had

the impression that the German pilots fly better than we do. I was told that these were some of the best pilots in Germany. That wasn't hard to believe!

QUIET MOTORS

At this event the motors had to meet a



Sebastian Seitz flew his 1/3 ASH 25 to 7th place. (There were 28 teams in all.) The scale workmanship on these had to be seen to be believed!

strict 82db noise requirement: if your towplane is too loud, you can't fly – it's that simple. This is a country where ALL model airplane fields MUST have quiet powered aircraft and so large and efficient mufflers and tuned pipes are readily available – that's how it's done, or you can't fly anywhere! Everyone has very quiet towplanes! Clearly these guys are light years ahead of us in noise reduction techniques, and judging from what was towed (up to an almost half-sized ASW 27!!!!!!), power is certainly not a problem!

You'd also be struck by the three and four bladed props used on every towplane there. These help reduce noise.

ONE FLICK OF THE PROPELLER

One other striking fact about the motors – all were very easy to

start and almost no one held the airplanes while the pilots started them up (at very low throttle). Here, we often wack our props very hard or sometimes the motor won't start. By contrast, these guys leisurely turn the props over once or twice to a gentle and almost inaudible put-put-put purrrrring sound as the motors come to life.

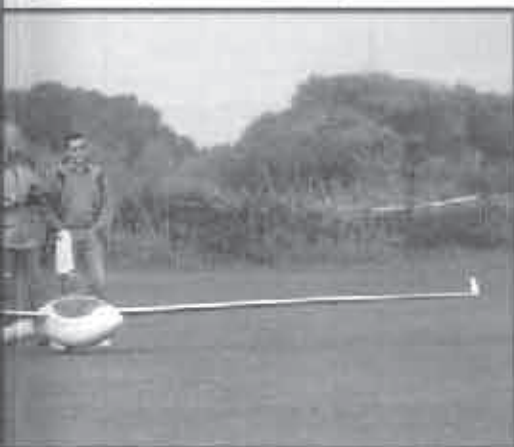
When these towplanes take off and are at their loudest, they can be heard – but they are three to four times quieter than their American counterparts. When at height (perhaps 500 feet up), the towplanes are almost inaudible, and so the very lack of loud motor noise at this Seglerschlepp event certainly added to the aesthetic experience of a sailplane competition.

SOME WERE SCRATCH BUILT, SOME READY-MADE KITS

Many of the airplanes flown were scratch built one-of-a-kind beauties, while at the other end of the spectrum was a completely ready to fly Orfa (all glass ASW 27 kit). Where the kit came from or who built it was not all that important because this was a test of flying skills! I'm sure, however, that all things being equal, the larger, more impressive models wowed the judges just a bit more than the smaller (1/4 and 1/3rd) sized sailplanes.

THE SEGLERSCHLEPP EVENT

Unique to Germany, this event has been running for many years now, and if anything is gaining in popularity. It's not hard to see why. Flying the required figures demanded modest piloting skills (flying them very well is another story), and the fact that this event combines the skills of a towpilot with his team mate, the glider pilot, makes this a very attractive competition format indeed! The glider's requirements combine both duration and piloting skills and did these guys ever have a ball!



There were 2 Raylles at the event. One was flown to 2nd place by Georg Thanner (towed 1/3 ASK 13 piloted by Johann Fischer), the other piloted by Florian Schambeck (towed Sebastian Seitz' 1/3 scale ASH 25). One of these had complete cockpit details, working landing lights, and slats. They are beautiful flying machines!



This 1/3 ASK 13 flown by Johann Fischer took 2nd. This is part of the "lineup" of scale competitors to droll over. These guys flew as well as their airplanes looked! "Wow!!!!" comes to mind!

(Left) Hans Siegel towed with this 1/2.2 Fly-Baby, the largest towplane there.

The towplane is required to:

1. Start the motor and taxi out into a circle in the middle of the field. (The pilot was permitted to stand next to the circle.) This presented no difficulties and virtually everyone got the highest score for this very simple maneuver.
2. Start the airtow, fly straight out in a gentle (scale-like) manner, do a 90 degree turn away from the field, fly a while, do another 90 degree turn downwind, continue climbing and do a 90 degree turn crosswind, then another into the wind (not directly overhead). In other words, a large rectangle is flown. All this must be piloted as smoothly and as scale-like as possible. Now, lined up once again into the wind, the towplane must climb out straight, until well past the landing strip and the sailplane releases.
3. When the sailplane drops the towline, the towplane must peel off and head back to the landing strip and make a low pass, dropping the towline into the highest-scoring box marked on the field (more on the layout later).
4. Once the towline is released, the towplane must climb out, do a circuit, make another approach and touch down on the highest-scoring box marked on the field. The quality of landing will be scored as well as where the towplane touched down. Once on the ground and stopped, it's then up to the sailplane...

The glider is required to:

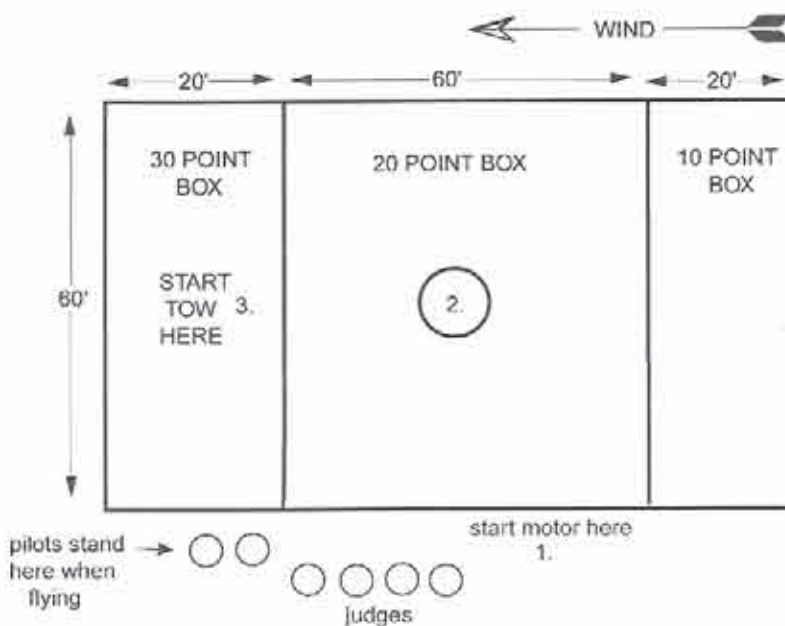
1. Do a scale-like takeoff and smooth airtow.
2. Once the rectangular airtow is completed, fly into the wind past the field and release (once released the glider has 200 seconds to touchdown). When released, the glider must fly straight and level for 7 seconds. After that, the glider can tootle around for a while until the towplane lands.
3. Now it's up to the glider pilot! The glider must start the approach and landing. Touchdown should be on the highest-scoring box at exactly 200 seconds after the towline release. A good scale-like landing gets the highest points! Scale realism counts for a lot here!

That's all. It doesn't sound all that difficult, does it? Well, to fly through these maneuvers certainly isn't all that hard, but to do all this perfectly, well, that's quite another story and why some of the teams placed at the top while others didn't fare as well.

Bigger flies Better!

As a general rule, the larger towplane-sailplane combinations seemed to get higher scores than their smaller counterparts. When you see the large birds fly it's not hard to see why: the larger they are, the better they fly. And, that certainly seems to play an important role in this Seglerschlepp competition!

SEGLERSCHLEPP FIELD SCORING LAYOUT



1. The tug starts up and taxis out into the middle of the circle (the pilot can stand on the field).
2. The tug stops in the middle of the circle for 30 points.
3. The tug is moved into position and the towline is attached.
4. The tug and glider take off (the pilots can stand behind the glider).
5. The glider and tug fly a scale-like climbing rectangle ending into the wind on the far side of the field.
6. The glider releases when well past the field flying upwind (200 second duration begins when glider releases)
7. The glider flies straight for 7 seconds then flies anywhere he wants.
8. The towplane dives, makes a scale-like low pass and drops the towline into the 30 point box.
9. The towplane then makes a scale-like approach, landing and roll out touching down in the 30 point box.
10. The towplane taxis off the field.
11. The sailplane makes a scale-like approach, landing and roll out, touching down in the 30 point box at exactly 200 seconds from the time of release.

Team	Motor/Pilot	Plane	Scale	Motor	Glider/Pilot	Plane	Scale
1	27 Dieter Deyerler	Pilatus Porter		60ccm	Gerfried Losert	C103C Tw in Akro	
2	7 Georg Thanner	Morane Saulnier MS893	1/3	95 King	Johann Fischer	ASK 13	1/3
3	18 Martin Hofmann	YAK 112	1/3	100ccm	Andreas Hofmann	Phoebus A	1/2.75
4	10 Burkard Wagner	PZL Wilga 00A	1/3.3	140	Michael Franz	ASW 27	1/2.5
5	16 Armin Lutz	PA 18	1/3.3	74ccm	Hans Lutz	Ka6E	1/3
6	33 Claus Borst	DO 27	1/3.3	100ccm	Rolf Rausch	Standart Libelle	1/2
7	2 Florian Schambeck	Rallye Morane	1/3	King 100	Sebastian Seitz	ASH 25	1/3
8	23 Georg Gruhl	Wilga	1/3	140ccm	Norbert Schmidner	ASW 15	1/3
9	11 Thomas Hoehsman	Piper PA 18	1/3	King 95RV	HansHoehsman	Ka 7	1/3
10	24 Fritz Michelfelder	Wilga 35	1/3	King 140 E	Ulrich Kienle	ASK 18	1/3
11	3 Alexander Frisch	PZL 104 Wilga 35	1/3	140 King	Uli Reichmann	Duo Discus	1/3
12	21 Josef Burkhard	Pilatus Porter	1/4	80ccm	Adalbert Pitz	ASH 26	1/3
13	8 Marko Lewandowski	Wilga M	1/3	140	Alex Rothenberger	ASW 27	1/3
14	25 Ernst Ull	Piper J3	1/3.3	3W80B	Walter Keller	Nimbus 4-D	1/3
15	31 Peter Moser	Piper PA 18	1/3	2G82	Ulrich Richter	Pilatus B-4	
16	9 Klaus Ernst	Piper	1/3	60 3W	Tobias Fritz	Ka8E	1/4
17	29 Peter Raab	Piper		King 95	Ernst Endl	ASK 18	
18	28 Stephan Voelker	Jodel DR400 Remo	1/3	King 95	Thomas Gleissner	Duo Discus	1/3
19	20 Daniel Saam	Piper PA 18	1/3	King 100R	Christian Ebert	Fox	1/3
20	13 Andreas Schupp	Piper PA 18	1/3	King 100R	Matthias Schupp	Duo Discus	1/3
21	1 Heinz Ost	Wilga	1/3	140ccm	Michael Jung	L-Spatz 55	1/2.5
22	14 Markus Hoehsman	Piper PA 18	1/4	ZG 35	Holger Hoehsman	Ka6E	1/4
23	19 Klaus Roockle	Swiss Trainer	1/3.5	King 100 Box	Matthias Rolke	Discus	1/3.3
24	6 Hans Siegel	Fly-Gaby	1/2.5	King 140ccm	Manfred Schroeder		1/3
25	17 Thomas Schellinski	Swiss Trainer	1/3.3	SM 75	Christoph Kurtzel	ASH 25	1/4
26	15 Franz Weigl	Space Walker	1/3.9	ZG 62	Severn Lohberger	Ka6E	1/3.7
27	22 Peter Henjes	Wilga	1/3	King 140	Harald Sieben	Discus	
28	32 Markus Manz	Big Lift		08 80X 36x	Andreas Thoma	Standart Libelle H201	1/4

Large is a relative term. To some of us, a 4 meter ship seems HUGE. I used to think that, too. After seeing a field full of 1/3 and larger sailplanes and towplanes one quickly becomes accustomed to the spectacle of gaggles of huge models everywhere! But in this Seglerschlepp competition, all things being equal, the larger birds appear to fly more slowly and realistically and so get scored more highly than their smaller sister ships.

The Seglerschlepp is the One Event not to Miss

If you ever want to see what the state-of-the-art in sailplanes and towplanes is, the Seglerschlepp is the event not to miss!!!!!! Every year the very best towplanes team up with the best sailplanes and congregate from all over Germany in one place for two days. Nowhere on earth can you see more and better flying machines!

I seem to be using a lot of "!!!!!!!" which is quite true. This was a most superlative experience! It was a real privilege to be there and to be able to get a first-hand view of what goes on across the pond in Germany.

If you ever get the chance to visit a Seglerschlepp competition, beg, borrow or steal what you must in order to attend! You will carry away with you vivid memories of wonderful models, superb flying and warm hospitality for the rest of your days! Perhaps watching just how it should be done will also make you a better pilot.

POST SCRIPT - VARIATION ON A THEME

It would be well near impossible to assemble 32 towplane-sailplane teams anywhere in the USA right now, so why not try something a little different? Create an airtow event with sailplanes competing along similar lines outlined above (towplanes not competing?). Or you could add a little spice and require a few simple maneuvers as well as a duration (but not thermal duration). Any interest anyone? Sky's the limit!

May blue skies and cumulus clouds come your way!

Good flying and happy landings!

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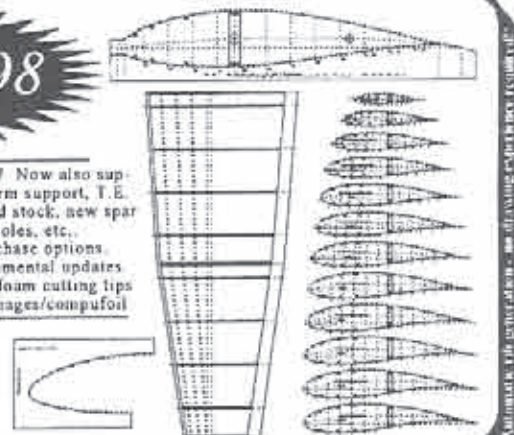
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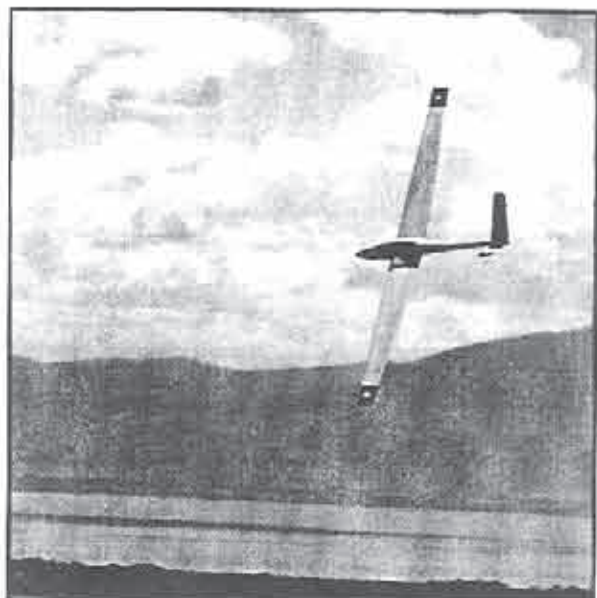
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(Left) SOAR Utah '95
photography by Joe Chovan.



Joe Crow

The Perpetual SALTO

by Fred Mallett
Corpus Christi, Texas

My first scale sailplane since balsa sticks, tissue paper and free-flight was a Viking Models 1/5 scale Salto. I wanted it mostly for working our small local slope, but also hoped to fly it off a high start, and maybe a winch. I think it was finished back in 1994.

Based on those flight criteria, I went with some variant of a SD7032 root, changing to a SD7037 at the tip. Being a confirmed sloper at the time, the wings were laid up with full span, top and bottom, 5.7 oz. unidirectional carbon, with some graduated layers of 3 oz. glass cloth. The mylars were pre-painted white on top, but red on the bottom as a concession to visibility. Some Swiss-like markings were added for fun. Adhering closely to scale decorations was not a real consideration, though a slight decrease in root chord and stretch of spar was incorporated, since my math showed that to be truer to scale. The plane is not scale in flying surfaces, using typical full house thermal ship wing controls. This was for landing in tight spots on slopes. I also made two sets of tails, one slightly larger for better slow speed handling, the second closer to scale in planform, though still oversized. The wings with servos come in at 11.5 oz. each, and the fuselage/tail assembly, including 1300ma batteries and all radio gear is 31 oz., for a wing loading of about 13 oz./sq. ft.

First Flight

Right from the start this plane was something special. After guessing at CG, and re-checking all control throws, the first hand toss was into 12mph winds at the local 30 foot slope. She just climbed steadily into the wind, made a slight left turn, and only took a gentle correction from me to start down the lift band.

After 3 or 4 passes, I started to explore the edges, and decided this plane was not only scale looking, but a sweet flying plane. No bad habits were observed, even way outside the expected flight envelope. Other

than adjusting some elevator compensations, only one change was ever made to the plane or radio setup since the first flight. That change was adding an auto-pilot. This is a rather simple setup; it consisted of a small stuffed crow I named Joe. A last name of Crow was quickly added by the local sloper crowd. I often got calls asking if Joe could come out and play. As it turned out, Joe Crow is a good, survivalist pilot.

The Salto's first public appearance might have been "Soar Utah '95". During the open flying sessions, I got to know what a sweet plane it really is. On one flight, the winds kept getting lighter, and one by one all the other planes landed. Finally, it was just Joe Crow's Salto and an open class thermal ship scratching along the hill, barely holding altitude. Full span camber sure comes in handy in a case like that, but it still blew me away that old Joe was scratching along comparable to an open class ship. It was a way pretty moment; the planes were evenly matched in speed and cruising just a few feet in front of the gathered crowd. Later that same day, the other end of the plane's ability was proven: slope durability. The winds were back up, and loads of planes were in the air. Being fairly attached to the Salto, I was flying way out off the hill where there was less traffic. Most of the planes in the air were true slopers, with some war birds thrown in for the visual pleasure. (This was before the EPP revolution.)

There was a P-51 shape coming in from the right, at my altitude; I noticed by the size that it was way closer to the hill than I was, since most all warbirds seemed to fit into the 44-48" class. Just to be safe, I banked left and pulled a bit to turn away from the hill and climb; but too late, as the planes visually merged. *Bang!!* Debris everywhere and two forms were spinning in the air. My heart sunk, but Old Joe was at the controls, and stopped the spin, dove for airspeed, and gently resumed level flight, quite a ways below hill level. All the parts of the Salto seemed to be working, so with gentle controls, altitude was regained for a smooth landing to look over the damages.

The leading edge of the wing was split open, and there was a small de-lamination bubble, but the wing still felt stiff. I was wondering where all the debris came from when a gent tapped me on the shoulder to show me what was left of his 60" plane. Actually, there were three peoples worth of hands holding the parts. It seems that carbon beat sticks in this case, and Joe got to mark one under the canopy. I felt bad, but Joe didn't; his sewn-in-grin seemed to

get larger somehow. A little squirt of epoxy, and Joe was back flying the next day.

I remember Joe's first winch launch. Since there are no glider guiders in my town, I had only been using a highstart. It was at the Guatemala Soaring Festival, organized by Frank and Enrique Arzu of the Guatemala flying club. We had been flying practice the day before the contest started. I broke out the Salto, mentioning that this would be its first winch launch. Joe Wurts and Don Edburg came over and gave me lots of advice, suggesting a ground launch. I was more familiar with hand launching, so I went that route. Stepping up to the winch, I had a little trouble suppressing a grin. What Joe W. and Don didn't know, but Joe Crow and I knew, was that the highstart I had been using was really thick rubber, with lots of wind. Not to mention that 20 oz. of ballast and big slopes had already been explored. In other words, I had trust in the strength of the plane. The wind was blowing about 15, straight down the winch line. My mentors coached me on how to barely pulse the line, and let the wind gently take the plane up, as scale planes are rather delicate.

Hooking up the line, I pulsed the slack out, then stood on the pedal, hanging on tight to the plane. Joe W. and Don watched in muted horror while tension built up. One of them was stuttering I think, or maybe he was repeatedly yelling, "Stop!" I am not really sure, since it was sorta hard to hear over the wind screaming in the winch lines, and the sound of the motor stalling down to a halt. Joe Crow gave me a nod of the head, so I gave his plane a mighty vertical heave in true competition style. Through the beautiful whistle of wind on wing, I could hear Joe Crow's crackling laugh as he rocketed vertically. Just for effect, I threw in my best zoom and ping. I swear, there was actually a tiny bit of flex in the wings, which was the first time I had ever seen that. While Joe the crow was busy maxing out the zoom, I looked over to see what effect my little joke had. Joe Wurts just walked away shaking his head, while Don Edburg muttered, "I'm impressed."

The last day of the contest, the Salto was sitting on a stand. Hearing a crash, I ran over to see the Salto and stand laying on top of my Comdogger hand launch, and Esteem open class plane. Since the Salto had not flown for a couple days, I think it was jealousy on Joe Crow's part, though I can't figure out how he was able to knock the stand over, damage two planes, and not get a single scratch.

About two years ago, Joe Crow wanted to go flying, but I did not have enough time to drive to the southeast wind slope. He agreed to some high wind, highstart flying. It was blowing about 25 or so, which made the launches fun. Toss the plane with moderate stretch, and turn around, as the wind stretches the rubber behind you. The only trick was to be sure to stay into the wind enough so as not to break the rubber. Zooms were lots of fun; with the rubber pulling you into the wind, you got lots of apparent speed, then a hard yank up into vertical to get off the rubber and climb. With the wind shear down low, Joe could do lots of ground level aerobatics;

in fact, by tilting a ferris wheel type loop about 45 degrees, across the wind, with the upper part of the loop into the wind, only a mistake would end the flight. That must generate some kind of dynamic lift, but it is beyond my math to check it out.

After a couple dozen flights, I was starting to get a big kick out of the zooms, since the wind had increased. On this particular launch, I pushed Joe into a particularly hard dive, then zoom. Half way up the zoom, the Salto came to a dead stop; I hardly had time to go, "Huh?", when it started flying backwards, going into a reverse half loop and roll. That was when I realized that Joe was in serious trouble. No problems, I thought. He could deal with this; just start circling tight, and stay near the highstart, since it was now obvious that the chute had snagged on the tail during the zoom. The problem was, the wind was blowing so hard, the rubber stayed stretched, and the plane remained backwards, dragged by the tail, fluttering side to side. I found that by putting on the flaps, the line would stretch; retract them, and it would go into the wind, but never enough to get enough slack to start flying. About half way down, my flying partner suggested that I just put the transmitter down and enjoy the flight. I did. It lasted almost 2 minutes; I wish I had a video. I had just started thinking about which scale plane I would build next, when my buddy said we better back up. The Salto seemed ready to crash right where it took off from. "A showboat to the end," I thought. At about 15 feet up, the Salto did a sashay to the right, and paused with the wings vertical. Keep in mind that the plane was oriented straight downwind, snagged by the tail, flying like a poorly designed kite. It looked like a wing tip crash/crush as it started to the ground, but then aerodynamics took over (or was it Joe?). The wings came level just as it got to ground level, by now floating rather slowly; and with about a six inch skid in the grass, came to rest about a foot from the transmitter. I picked everything up and went home; this time, I was the one shaking my head.

As many of you know, I have taken about a year or so off from flying. I was pretty burned out. Just recently, I have hit the slopes a few times. Yesterday, the wind was 18 from the north. Perfect for the Oleander Park slope. I woke up Joe Crow and grabbed the Salto for the first time in over a year, charging it up on the way to the slope. Oh, it felt good to watch Joe yank the Salto around the skies. The lift was good, the loops were big, the wings were singing; the half pipe was working. Joe was playing chicken with me, flying way too fast, and way to close. I should have been thinking, what a bad time this is for radio failure.

A few seconds later, I climbed out, and slowed down for a mental breather. THAT is luckily when that sick feeling hit me that I was no longer seeing any response to the stick. Now it was all up to Joe. Even though the plane was very close, I still ran to get under it, in case it was a range problem, and pulled full flaps just in case things started working again. The plane made a half circle downwind, heading for the 4 lane 45mph street, and the church

parking lot, then seemed to stall, and drop a wing. Diving straight for the busy road, I saw that Joe wasn't frozen in fear after all, as the flaps came full on; actually it was Crow mode. I took flaps off, but there was still no response to the transmitter. Looking things over later, it appeared to have been a battery failure, since the meter on the vision showed completely dead, though no battery warning went off. The battery will not take a charge.

The plane went behind my van, and a rather loud sound indicated a really bad thing had happened.

Fearing the worst, I ran around the van and was happy to see that Joe was a hero. He

had crashed into the parking lot, saving the lives of all those people driving by. Coming closer, I noticed that the wings were still straight, and so was the fuselage. Coming closer still, I noticed that Joe was now wearing a full on smile, instead of the typical, "I just ate something grin." I took a few minutes to find that there was a small crack in the very nose of the fuselage, not even worth fixing. One wing tip was also crunched a bit.

I think I will put Joe Crow back to sleep for another year; my heart can't stand the excitement.

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U-2 Building Project, Part I Overview

The time has come to decide on this winter's building project and, as I look around the basement, I find far too many candidates to choose from. A 1/5 scale Nimbus II fuselage, with 4 yards of carbon/glass fabric neatly rolled inside with the plans, is hanging by its tail, next to a 1/4 scale Pik 20 fuselage, both from Viking Models, U.S.A. A small fiberglass fuselage for the DSC Soar Ace Slope Variant, constructed of bi-axial fiberglass braid, sits sadly collecting dust near the hot wire cutter, which has not yet been assembled since my move from Portland, Maine, earlier this year.

On the other side of the basement sits my Sailplanes Unlimited, Ltd. 1/4 scale Krause ASW-24, which needs spar repair to one wing, which occurred during Elmira '98. The damaged wing is supported by the shipping box of another Sailplanes Unlimited kit, a 1/4 scale ASK-21. I picked it up at Elmira this last year from a former DownEast Soaring Club member for a price that I don't dare to mention. I'm certainly not looking for pity, because many years ago I could not envision having such a dilemma. So, why is it with all this backlog of kits and repairs that I feel like trying something new and different? I guess it's the same reason that we fly non-powered aircraft for hours on end, at altitudes and locations that other flying hobbyists just can't comprehend.

Well, I was sharing my building dilemma with Dave Garwood, when we drifted off the subject and into the realm of "kits I wish someone would sell". We both immediately focused on the Lockheed U-2, specifically the U-2R/TR-1 variant. This would be an ideal PSS if built true to scale, and not modified to the extreme of being unrecognizable, as is so often the case. Such a plane could possibly be aerotowed or even winched. We agreed to pursue the issue, and at least plot some lines, in order to take a closer look at a properly scaled down version.

At our next meeting, Dave brought along three scale documentation books he had acquired over the years. For over 10 years now, Dave has wanted a U-2, and the collection of documentation he's got shows it! We decided that I would plot the lines on a CAD system at work, and get him a

copy so that we could better grasp the magnitude of the project. 1/12th scale was selected, which yields the following approximate dimensions:

Wingspan:	100"
Wing Panel:	47"
Wing Root:	14"
Wing Root, Tip:	3.75"
Fuselage Length:	59"
Fuselage Length, max.:	8.3" @ Jet Intake
Fuselage Width, T.E.:	5"
Wing Area:	8 sq. ft.
Tail Span:	26"
Vertical Fin:	10"

When I passed the information on to Dave, I could tell from the crack in his voice that this was going to be a significant undertaking, especially to keep the plane easily transportable, which is one of his concerns. Dave's the only one I know with a split wing Coyote that still fits back into the original box.

I had originally wanted to use 1/10th as the scale, but that would have been far too large for our needs and flying sites; just thinking about the length of the root

chord alone is a scary thought. With the scale selected as 1/12th, we decided to go ahead with the project. Since both of us have written for *RCSD*, we thought it would be especially interesting to

share our progress and techniques, particularly with regard to our different building styles, selection of materials, and technical approach.

We'll make every effort to document our planned approach through each step of the project, noting what works well, what doesn't work well, and any rework. Neither Dave nor myself have any experience with a scratch project as big as this one, so we'll draw upon the many technical and construction articles from the archives of *RCSD* as well as seek advice from some of the authors.

The plans as of this date (11/18/98) are to build a male plug for the fuselage out of wood, and cast the molds from a specially formulated, machinable gypsum product used in the composite industry for one offs and CNC proofing. The wings will most likely be built from foam with a wood skin. We opted for this method, because the wings will be black as per scale and would overheat if traditionally vacuum bagged

with fiberglass wing skins. The rudder may or may not be functional, and flaps, used on the full size (25%), will be retained. Landing gear is out of the question. We will attempt to build slope survivability into the design/construction of the plane, as well as using advanced composites and composite techniques where it makes good sense. The deadline is to produce both planes prior to mid-May, and to keep the cost under control.

The next installment of this series should focus on fuselage development, airfoil selection, and wing construction/design.

See ya next month! ■

Building Along?

For those of you that plan to build along with Steve & Dave, please drop them a line. They'd like to hear how you're doing. Would it help if we provided some of the more detailed photographs through our web site? At least, a photograph of the construction, from time to time?



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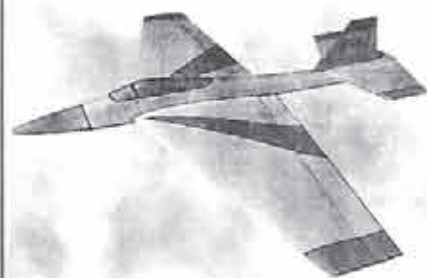
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February 19-21	Pensacola, FL	July 10-11 Lancaster, PA
Pensacola 1999 Asher Carmichael, (334) 626-9141 ACarmic985@aol.com		LASS Open John Murr, jmurr@redrose.net (717) 285-7025
Rusty Rood, (850) 432-3743		July 24-31 Muncie, IN
April 24-25	Newark, DE	AMA NATS 24th: Sport Scale Sailplane, F3B, XC 25th: F3J 26th: HL 27th-28th: 2M 29th-30th: Unlimited 31st: NOS & RES
SKSS Unlimited John Kirchstein, kirchste@voicenet.com (302) 731-2831		August 7-8 Princeton, NJ
May 8-9	Southern VA	MVSF Bill Miller, jerseybill@worldnet.att.net 609-585-6779
TMSS Unlimited Josh Glaab, jglaab@pinn.net (757) 850-3971		August 13-15 Ontario, Canada
May 15-16	Frederick, MD	GNATS Aerotow '99 Phil Landray, (905) 468-3923, linden@niagara.com Gerry Knight, (905) 934-7451 Lou Kleiman, (905) 688-4092, mistral@niagara.com
BASS HL Jack Cash, jcashjr@cyberun.net (301) 898-3297		August 14-15 Boston, MA
May 15-17	Lake Wilson, KS	CRRC Open Fritz Bien, fritz@spectral.com (508) 369-1720
Midwest Slope Challenge Paul Wright, (402) 796-2175 paulw@isco.com		August 21-22 Frederick, MD
May 22-23	Newark, DE	BASS Open Jack Cash, jcashjr@cyberun.net (301) 898-3297
ESL Fun Fly John Hauff, tankman58@aol.com (718) 767-1369		August 28-29 Newark, DE
June 5-6	Near D.C.	SKSS Open John Kirchstein, kirchste@voicenet.com (302) 731-2831
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Please send in your scheduled events as they become available!

EVENT ANNOUNCEMENT

MSSC '99

This year, the 8th Annual Mid-South Soaring Championships will be held at the North Alabama Silent Flyers (NASF) flying site on the Hobbs Sod Farm off Martin Road in southwest Huntsville, Alabama. This site consists of over 180 acres of closely mowed hybrid Bermuda sod.

We have been fortunate in the past to have good weather, superb help from the members of all three clubs (NASF, LASS, MASS), their families, and the many friends that have come back to fly with us over the last seven years. We also have had the great fellowship of as many as 125 fliers from as many as 25 states. We would not be able to have the terrific prizes for our raffle without the support of the many sponsors listed on our web site. Because of their kindness and donations, many great prizes have been given away over the years and this year promises to be no exception.

This year will again have four days of flying opportunities. Thursday and Friday, June 24th & 25th, will be cross-country racing at the site indicated on the NASF web site near Tanner, Alabama. On Friday, you will also have the opportunity to fly hand launch and compete with some of the best hand launch flyers in the country on the thermal duration site. The winner of 1998's MSSC H/L (Mark Kummerow) will undoubtedly be there flying his own H/L design bird. Friday evening will consist of the usual practice sessions, as many folks attempt to tune up for the following two days of tough competition. Saturday and Sunday, June 26th & 27th, will once again be for unlimited thermal duration, with some very hotly contested competition expected. This event will issue in for the first time an additional class into the unlimited soaring competition, called the Grey Cup, which is open to any flyer of age 62 or over, but is not mandatory. Also note that the Novice class has been dropped due to low turnout in the past few years. In years past, there has been tightly contested competition, with at least ten flyers always being in the hunt for the two-day unlimited high over all award.

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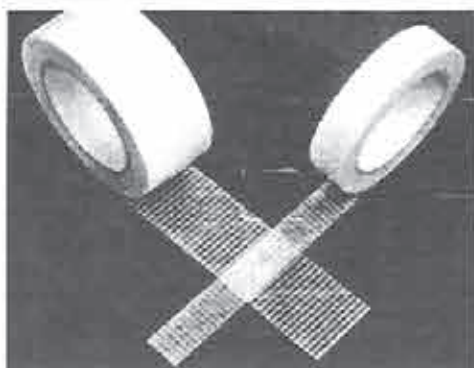
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PRECISION AMAP WING CUTTER, replacement parts, and service. AMAP Model Products, 2943 Broadway, Oakland, CA 94611. Butch Hollidge, (510) 451-6129, or fax (510) 834-0349.

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

PLANS - R/C Sailplanes - Scale, Sport & Electric. Old Timer & Nostalgia - powered, rubber, and towline. Scale - rubber. All models illustrated. Catalog: \$2.00. Cirrus Aviation, P.O. Box 7093 Depot 4, Victoria, BC V9B 4Z2, Canada.

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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://shl.ro.com/~samfara/>

Alabama - Central Alabama Soaring Society, Ron Richardson (Treas.), 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, slopesites in AZ (rugged), Arizona Flying Eagles R/C Demo Show Team, Dave Wenzlick, (602) 345-9232, <azdw@uswest.net> or visit CASL at <<http://www.public.asu.edu/~vansanto/casl>>

Arizona - Central Arizona Soaring League, Iain Glithero, (602) 839-1733.

Arizona - Southern Arizona Glider Enthusiasts, Bill Melcher (contact), 14260 N. Silwind Way, Tucson, AZ 85737; (520) 825-2729. 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.

California - High Desert Dust Devils, Stan Sadoff, 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 - 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 Olivetias 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, keisling@etc.com; Ben Lawless (Sec./Treas.), Lawless@ang.af.mil; Anker Berg-Sonne (Scorekeeper), (508) 897-1750, anker@ultranet.com; Josh Glaab (Contest Coordinator), (757) 850-3971, jglaab@pinn.net, <<http://www.eclipse.net/~mikel/esl/esl.htm>>

Florida - Florida Soaring Society, Mark Aizel (President), 1810 SW Terrace, Ft. Lauderdale, FL 33312, (954) 792-4918.

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

Georgia - North Atlanta Soaring Association, Tim Foster, (770) 446-5938 or Tom Long, (770) 449-1968 (anytime).

Hawaii - Maui Island Slope Soaring Operation (MISO), Duane A.K. Asami, 262 Kamila St., Kula, HI 96790, pgr. (888) 932-6247, <dhasami@mauigateway.com>

Illinois (Chicago Area) - Silent Order of Aeromodelling by Radio, Jim McIntyre, 23546 W. Fern St., Plainfield, IL 60544-2324; (815) 436-2744. Bill Christian, 1604 N. Chestnut Ave., Arlington Heights, IL 60004; (847) 259-4617.

Illinois (Northwest) - Valley Hawks R/C Soaring Club, Jeff Kennedy (President), 414 Webster St., Algonquin, IL 60102, (708) 658-0755, eve. or msg.

Iowa - Eastern Iowa Soaring Society (Iowa, Illinois, Wisconsin, Minnesota), Ed Harris (Editor), 2000 NW 84th Ave., Ankeny, IA 50021; (515) 965-5942, <harris.edwin@mcleodusa.net>

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

Kansas - Kansas Soaring Society, Pat McCleave (Contact), 11621 Nantucket, Wichita, KS 67212; (316) 721-5647.

Kansas - Aerotowing, Jim Frickey, (913) 585-3714.

Kentucky - Bluegrass Soaring Society, Frank Foster (President), 4939 Hartland Pkwy., Lexington, KY 40515; (606) 273-1817.

Kentucky - Louisville Area Soaring Society, Ed Wilson (Contact), 5308 Sprucewood Dr., Louisville, KY 40291; (502) 239-3150 (eve), e-mail: <edwilson1@bellsouth.net>

Louisiana - Capitol of Louisiana Soaring Society (CLASS), Leonard Guthrie (contact), 12464 Fair Hope Way, Baton Rouge, LA 70816, (504) 275-2122.

Maine - DownEast Soaring Club (New England area), <Jim.Armstrong@juno.com>

Maryland - Baltimore Area Soaring Society, Erich Schfitzkus (President), 52 North Main St., Stewartstown, PA 17363; (717) 993-3950.

Maryland & Northern Virginia - Capital Area Soaring Association (MD, DC, & Northern VA), Chris Bovais (Coordinator), 12504 Circle Drive, Rockville, MD 20850; (703) 643-5513.

Michigan - Greater Detroit Soaring & Hiking Society, Greg Nilsen (Sec.), 260 Rosario Ln., White Lake, MI 48386-3464; (248) 698-9714, G.Nilsen624@aol.com.

Michigan - Great Lakes 1.5m R/C Soaring League & "Wings" Flight Achievement Program & Instruction, Ray Hayes, 58030 Cyrenus Lane, Washington, MI 48094; (810) 781-7018.

Minnesota - Minnesota R/C Soaring Society, Tom Rent (Contact), 17540 Kodjak Ave., Lakeville, MN 55044; (612) 435-2792.

Missouri - Independence Soaring Club (Kansas City area, Western Missouri), Edwin Ley (Contact), 12904 E 36 Terrace, Independence, MO 64055, (816) 833-1553, eve.

Missouri - Mississippi Valley Soaring Assoc. (St. Louis area), Peter George, 2127 Arsenal St., St. Louis, MO 63118; (314) 664-6613.

Nebraska - B.F.P.L. Slopers, Steve Loudon (contact), RR2 Box 149 El, Lexington, NE 68850, (308) 324-3451/5139.

Nebraska - Lincoln Area Soaring Society (Wilson Slope Races), Jim Baker, 920 Eldon Dr., Lincoln, NE 68510-4014, (402) 483-7596, <<http://www.geocities.com/CapeCanaveral/Hangar/1671/lass-2.html>>

Nebraska - SWIFT, Christopher Knowles (Contact), 12821 Jackson St., Omaha, NE 68154-2934, (402) 330-5335.

Nebraska - Ken Bergstrom, R.R. #1, Box 69 B, Merna, NE 68856; (308) 643-2524, <abergst@neb-sandhills.net>

Nevada - Las Vegas Soaring Club, Jim Allen (President), 7117 Caprock Cir., Las Vegas, NV 89129; ph (702) 658-2363, fax (702) 658-1996.

New Jersey - Vintage Sailplane R/C Association, Richard G. Tanis (President/Founder), 391 Central Ave., Hawthorne, NJ 07506; (201) 427-4773.

New York, aerotowing Rochester area, Jim Blum and Robin Lehman, (716) 335-6515.

New York - Elmira - Harris Hill L/D R/C, aerotowing & slope, John Derstine, (717) 596-2392, e-mail johnders@postoffice.prd.net.

New York, aerotowing Long Island Area, Robin Lehman, (212) 744-0405.

New York - (Buffalo/Niagara Falls area) - Clarence Sailplane Society, Lyn Perry (President), (716) 655-0775; e-mail perryll@staff.sunyerie.edu; Jim Roller (Competition Coordinator), (716) 937-6427.

New York - Long Island Silent Flyers, Stillwell Nature Preserve, Syosset, NY, Ze'ev Alabaster (President), (718) 224-0585, or Peter DeStefano (VP), (516) 586-1731.

New York - Syracuse area, Central NY Sailplane Group, Dave Zintek, Minoa, NY, (315) 656-7103, e-mail Zintek@aol.com.

North Carolina - Aerotowing, Wayne Parrish, (919) 362-7150.

Northwest Soaring Society (Oregon, Washington, Idaho, Montana, Alaska, British Columbia, Alberta), Sondie Pugh (Editor - NWSS Eagle), 1119 SW 333rd St., Federal Way, WA 98023, e-mail: parrot2luv@aol.com, (253) 874-2429 (H), (206) 655-1167 (W).

Ohio - Cincinnati Soaring Society, Ed Franz, 7362 Ironwood Way, Burlington, KY 41005; (606) 586-0177, <ejfranz@fuse.net>

Ohio - Dayton Area Thermal Soarers (D.A.R.T.S.), Walt Schnoll, 3513 Pobst Dr., Kettering, OH 45420, (513) 299-1758.

Ohio - Mid Ohio Soaring Society (MOSS), Hugh Rogers, 888 Kennet Ct., Columbus, OH 43220; (614) 451-5189, e-mail tomnagel@freenet.columbus.oh.us.

Oklahoma - Central Oklahoma Soaring, George Voss, (405) 692-1122.

Oklahoma - Tulsa R/C Soaring Club (TULSOAR), <http://www.mccserv.com/tulsoar>

Oregon - Portland Area Soaring Society (PASS), Pat Chewning (Secretary), 16766 NW Yorktown Dr., Beaverton, OR 97006, (503) 645-0323, e-mail: patch@sequent.com, www.europa.com/~patch/

Oregon - Salem Soaring Society, Al Szymanski, CD, (503) 585-0461, <http://home.att.net/~aszyl/sss/> for club's home page.

Oregon - Southern Oregon Soaring Society, Jerry Miller, 3431 S. Pacific Hwy. TRLR 64, Medford, OR 97501, e-mail Miller@aol.com, ph/fax (541) 535-4410.

Tennessee - Memphis Area Soaring Society, Bob Sowder, 1610 Saddle Glen Cove, Cordova, TN 38018, (901) 751-7252, FAX (901) 758-1842.

Tennessee - Tullahoma (Southern Middle Area), Coffee Airfoilers, Herb Rindfleisch, 106 Inglewood Circle, Tullahoma, TN 37388, (931) 455-1836, <herb@cafes.net>

Tennessee - Soaring Union of Nashville, Terry Silberman, PO Box 17946, Nashville, TN 37217-0946, (615) 399-0846.

Texas - aerotowing, Dallas area, Andrew Jamieson, 9126 Hillview, Dallas, TX 75231, (214) 349-9346, e-mail ajsleep@aol.com. Larry Sengbush, (972) 291-4840.

Utah - Intermountain Silent Flyers, Tom Hoopes, (801) 571-3702 (eve), "Come Fly With Us!"

Vermont - Steve Savoie, 926 Gage St., Bennington, VT 05201, (802) 442-6959.

Virginia - Blue Ridge Area Soaring Society (Central Virginia - Waynesboro), Tom Broeski, (540) 943-3356, <tjb@rica.net>

Virginia - Tidewater Model Soaring Society, Herk Stokely, (757) 428-8064, herkstok@aol.com.

Virginia - Appalachian Soaring Association, Virginia's Southwest (Bristol area), Greg Finney, 106 Oakcrest Circle #5, Bristol, VA 24201; (540) 645-5772, e-mail <gfinney@nass.com>

West Virginia & Pennsylvania - Tri-State Soaring, Chip Vignolini, 2784 Mill St., Aliquippa, PA 15001; (724) 857-0186, Voice mail (412) 560-8922, <cydne30a@prodigy.com>

Washington - Seattle Area Soaring Society, Waid Reynolds (Editor), 12448 83rd Avenue South, Seattle, WA 98178; (206) 772-0291.

Wisconsin - Valley Aero Modelers, Lee Murtay, 1300 Bay Ridge Rd., Appleton, WI 54915; (920) 731-4848, <74724.65@compuserve.com>

Outside U.S.A.

Australia - Southern Soaring League, Inc., Mike O'Reilly, Model Flight, 42 Maple Ave., Keswick SA 5035, Australia. Phones: ISD+(08) 8 293-3674, ISD+(08) 8 297-7349, ISD+(0118) 8 082-136 (Mobile). FAX ISD+(08) 8 371-0659.

Canada - Montreal Area - C2VM Glider Club, Jacques Blain (President), days (514) 443-5335, eve. (514) 652-6167.

Canada - Greater Niagara Area Thermal Soarers (GNATS), Flat Field Soaring & Aerotowing, Gerry Knight, (905) 934-7451 or Don Smith, (905) 934-3815.

Canada - MAAC Men Gliding Club, Jim Holland, 168 Verona Dr., Winnipeg, Manitoba, Canada R2P 2R8, (204) 697-1297.

Canada - Southern Ontario Glider Group, "Wings" Programme, dedicated instructors, Fred Freeman, (905) 627-9090, or Bill Woodward, (516) 653-4251.

England (CIAM Flyer), Jack Sile (Editor), 21 Bures Close, Stowmarket, Suffolk, IP14 2PL, England; Tele. # 0449-675190.

England (southwest) - Sean Walbank, Woolcombe Hays, Melbury Bubb, Dorchester, Dorset, DT2 0NJ, phone 01935-83316.

Hong Kong - Robert Yan, 90 Robinson Road, 4th Floor, Hong Kong, (852) 25228083, fax (852) 28450497, yanr@asiaonline.net.

Japan - Dr. Paul "Sky Pilot" Clark, 2 - 35 Suikoen Cho, Hirakata Shi 573, Osaka Fu, Japan; IAC+(81) 720-41-2934, <pclark@osk3.3web.ne.jp> <http://www.osk3web.ne.jp/~pclark/skypilot/>

Scotland - Ron Russell, 25 Napier Place, South Parks, Glenrothes, Fife, Scotland KY6 1DX, ph. 01592 753689.

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 turbulence 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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RCSD Index/Database

Available from: <http://www.athenet.net/~atkron95/pcsoar.htm>. Or: <http://www.halcyon.com/bsquared/RCSD.html>. Or, send 3.5" high density disks and 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>.

Sailplane Homebuilders Association (SHA)

A Division of the Soaring Society of America



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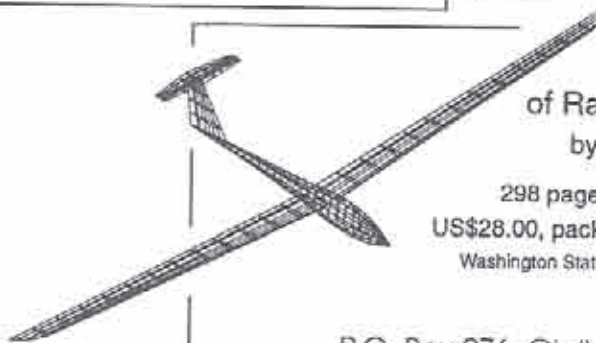
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Vortex SP
Electric Specifications:
Wing Span 48"
Wing Area 275 sq/in.
Weight 38 oz.
Airtail Trained RG14



The Vortex SP is a seven cell .06 size airfoil. It uses a can motor, A-10 .05 or a Avax 140527. It is fast, aerobatic and loads light on its wings. One-cell sheeted wings, epoxy glass fuse, CAD plans and instructions.

Kit Price \$150.00
Shipping and Handling \$5.00, CA sales tax 7.75%

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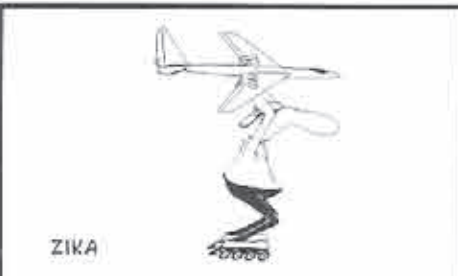
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ZIKA

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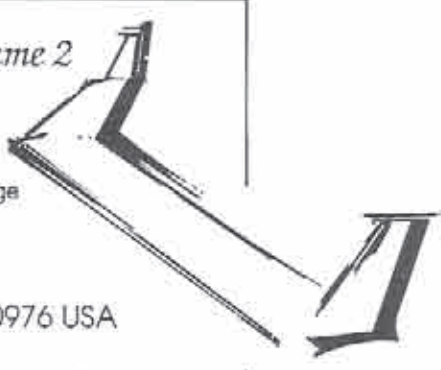
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THE CONDOR

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BY MODELERS, FOR MODELERS

FEATURING THE NEW
TRIPLE TAPERED SD7035 WING!

SPECS:
WING SPAN 112.5"
WING AREA 918 SQ. IN.
AIRFOIL SD7035
WEIGHT 62-66 OZ.
WING LOADING 9.7 - 10.3 OZ./SQ. FT.

The Condor is designed by Mark Allen, who is considered one of the best model sailplane designers in the United States, if not the world. Mark has taken all of his previous experience in competition thermal duration flying, plus all the knowledge he has gained from his earlier contest and sport designs, to design the Condor. Mark Allen's previous planes, to name only a few, are: Falcon 880 and 800, Falcon 600, Swift, Thermal Eagle, Vulcan, Night Hawk, Sky Hawk, Electric Hawk, Falcon 550E, Rocket, Pocket Rocket and, of course, the molded, world championship F3B Eagle. By taking the best of these designs and the new construction techniques available today, Mark has come up with, what we feel, is the absolute best open-class sailplane available.

The wings are made in America by Ron Vann, owner of Spectrum Enterprises. Ron is also an avid competition flier, and is considered to be one of the best wing manufacturers in the industry. Taking his years of experience in manufacturing wings, Ron has produced wings and stabs for the Condor that we feel are world class. Starting with the spar that Mark Allen designed, Ron uses only the best and most accurately cut foam cores available. He then uses hand-picked obechi from Kennedy Composites, which is applied with West Systems epoxy.

CONDOR

Tomorrow's Sailplane,
Technology Today

This is after he has first reinforced the wing with carbon fiber and fiberglass. The servo wells are routed out, as are the flaps and ailerons. What this means for the sailplane enthusiast is a minimum amount of work before getting the sailplane into the air. The wing is light but strong enough to take "pedal to the metal" launches. Also available as an option is Ron's unique internal capped hingeline. This means even less work for the modeler.

The fuselage is made by Steve Hug, owner of the Fuse Works. Steve is another master at what he does. Fuse Works makes what we consider to be the best fuselage in the business. Steve uses only the best fiberglass and Kevlar™ available. All fuselages are manufactured using the West Systems epoxy. Steve's fuselages have the least amount of pinholes, if any, that we have seen. In fact, the fuselage is so pretty that many people do not paint it. The fuselage is extremely light, and yet strong enough for very aggressive flying and landing. For those with very little

building time, and those who don't like to paint, there is an optional pre-painted, in the mold, fuselage which includes a unique carbon fiber canopy.

All kitting is done at Slegers International's new and larger manufacturing facilities. We have spared no time or expense with supplying the modeler with the best materials available. The kit contains pre-sheathed wings and stabs by Ron Vann, fiberglass and Kevlar™ reinforced fuselage by Steve Hug, 3/8" diameter titanium wing rod from Kennedy Composites, optional 3/8" diameter steel wing rod by Squires Model Products, control horns and tow hook by Ziegelmeyer Enterprises, pushrods by Sullivan, or optional one piece steel rods. All wood is custom cut. Specially cut basswood of 60" is supplied to eliminate splices in leading edge, flaps and aileron capping. All balsa is hand picked, light to medium, to ensure light weight wing tips, stab tips, and rudder. Aircraft ply is used for the pre-fit servo tray and towhook block. A comprehensive instruction manual is included.

The Condor, designed by Mark Allen, wings by Ron Vann, fuselage by Steve Hug, and kitted by Slegers International, we feel, is the best open-class, thermal duration sailplane available, at an affordable price of \$395.00 plus S&H.

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1/4.8	Salto	HQ3/14	179" (4.53m)

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1/4.5	ASK 21	E393	165" (4.2m)
1/4.6	Ka6E	E392	165" (4.2m)
1/4.75	FOX	RC12	149" (3.77m)
1/4.8	DC 800	E207	163" (4.15m)

Buechele

1/4.75	Fox	HQ1.5/10-12	149" (3.77m)
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1/4.2	Nimbus 4	E68-66	246" (6.28m)
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PriBeck

1/4.5	ASW27	HQ2.5/12	196" (5m)
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1/4.8	Ka6E	E207-205-205	196" (5m)
1/4.7	ASW19	Rftz3 mod.	212" (5.4m)

Schueler & Fleckstein

1/4	all glass ASW24	E203	196" (5m)
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Bruckmann

1/4	Salto	Ritz 2	176-203" (4.5-5.2m)
1/4.8	ASK 18	E 203	165" (4.2m)
1/4	Fox	E 374 SD 6060-6062	183" (4.66m)

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1/4.8	all glass Kestrel T 19	HO 3/15-10	196" (5m)

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Brauer: all glass 1/4.5 Pilatus Porter Turbo 139" (3.52m)

Roedelmodell: 1/4 Jodel Robin 86" (2.18m)

SPECIAL ORDER

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1/4	ASW27	HQ2.5/15	294" (7.5m)
1/4	Fox	E374	183" (4.66m)

Bruckmann

1/4.5	Fox		222" (5.65m)
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Schueler & Fleckstein

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1/4	all glass ASH 26	HQ3/14-10	235" (6m)
1/4.5	all glass ASW15B	HQ3/14	235" (6m)

