

VOYAGER

By PIOTR ZAWADA . . . The Eastern European CL Champion has evolved this design over a number of years of successful competition. If you want a highly-competitive control line aerobatic craft, this is for you!

• The Model club in Salgotarjan organized its first control line aerobatics contest nine years ago. They called it "Nograd Cup F2B." Nograd is a district in Hungary and the beautiful town of Salgotarjan is situated in this district.

From 1976 to 1979 only Hungarian competitors flew at this contest. Since 1980, the Nograd Cup F2B has been an open FAI international competition. Only Czechoslovakian, Polish and of course Hungarian contestants flew in 1980, but four years later in 1984 thirty-four F2B pilots from Czechoslovakia, Poland, Austria, Romania, Hungary, and even from North Korea came to Salgotarjan. Thus this time "Nograd Cup F2B" becomes the most attractive contest in East Europe, an open contest with competitors from the whole world coming to Salgotarjan every year in September.

"Nograd Cup F2B" is conducted according to FAI rules that are approximate to AMA rules for control line precision aerobatic models. Each contestant does three flights. Five judges score the flights. Only the sum of three middle scores of them gives the result of one flight. Sum total of the scores of two best flights gives the result of competitor and his place. Almost every international contest is contested like this.

Top three competitors and the best junior under 18 get the prizes and the best flyer gets the "Nograd Cup F2B." It is a very expensive beautiful cup made from crystal. The rules say: who wins this cup three times in five years will get this cup forever.

I flew at this contest five times. In 1980 I did over one hundred flights because the World Championships were held in Poland. My stunt ship Lucky-15, made in 1979 was a very good model for bad weather. Thus I was afraid of only two flyers in Salgotarjan: Attila Morótz from Hungary and Jan Skrabalek from Czechoslovakia. After three days of hard fight in the air I was a winner and won the first international Nograd Cup F2B. I was very happy because it was my first valuable success in an international contest.

For the 1981 season I made a very good and interesting model L-18 MALUCH as a

small copy of Lucky-15. This model was published in *Flying Models* June 1982. But unfortunately it was destroyed in Czechoslovakia so for the Nograd Cup F2B in 1981 I had to come with my older stunt ship which was not so good. Thus I got fourth place only.

In 1982 I flew the L-19 based on Bob Hunt's Genesis 40. It flew very well in good or very windy weather, powered by ST 46—my favorite engine—with three-blade prop 11-6, my homemade. During World Championships '82 in Sweden I got 16th place, much better than any other Polish stunt flyer in history of World Champs. So I won third international contest Nograd Cup F2B second time without any problem that year.

In 1983 I flew with the same L-19 model—winner of many international and national contests. After two days of Nograd Cup F2B I kept first place but my Hungarian friend Attila Morótz was close behind us. So third day of this contest was very important for both of us. During very windy weather Attila got a bit more points and he won fourth contest of this cup. I felt I was the winner but as I always say . . . the judges are always right. And friendship with other modelers is much more important to me than gold medal or cup.

For 1984 season I made new experimental model L-20B VOYAGER. It is a good stunt ship and flies very well in good or bad weather, i.e. I won international contest in Liberec, Czechoslovakia during very bad weather, with rain and wind about 25 mph even. Fifth Nograd Cup F2B



Piotr and his wife Eve, holding the Nograd Cup F2B, and his winning Voyager CL plane.

was very important for me and organizers, because I was two times winner in four years. The first two flights I did well so I kept first place but Attila was close behind me, like a year ago again. This third day of this contest was very nervous for us both. The weather was bad too, so two good contestants crashed their models. In this situation we both flew worse and I was winner of Nograd Cup F2B third time in five years!!! The beautiful cup belongs to me and came with me to my home. The organizers of this contest will have to buy the new Nograd Cup F2B for next contests.

L-20B VOYAGER - DESIGN

After the World Championships '82 in Sweden I spent many hours on new conception of my next stunt ship and decided about a few points: First: the wing should be detachable for easy shipping and transporting to contests. Yes, the model with detachable wing is heavier, about two ozs, but I often go to contests by train, by bus, by air so in this case my travel should be more comfortable.

Second: engine, wing, and tailplane should be on the same center line—look at the Avanti by Bob Baron. It is a good conception in my opinion and I saw him and his model during a contest in Sweden.

Third: aspect ratio of wing should be about 6:1. Usually used is about 5.2-5.5:1. I read description of Dennis Adamisin's Eclipse II, got a nice letter from him (much thanks). I did also an experimental stunt ship with wing aspect ratio 7:1. It flew tight sharp corners excellent but too large wing was difficult for shipping and transporting. Aerobatics models with higher aspect ratio of wing fly better in good or very windy weather in my opinion.

Fourth: model should be adjustable so I made adjustable lead out lines, tip weight, rudder angle, and control system.

Fifth: engine should be mounted horizontal similar to Claus Maikis from West Germany with his Indigo (much thanks for him for information about). In this case I do not have to invert my model for engine start.

The control system should be very strong but as light as possible. All must move very easy without any slop in the bellcrank and flap horn and a little slop in elevator horn. As I said this control system is adjustable but after many practice flights with many different flaps and elevator ratio I decided the 1:1 ratio is the best for this model and it is shown on the plan.

This plan was drawn after my success in Hungary after many experiences with control system control surfaces, tanks, props, tip weight, etc. As you can see flaps and elevator surfaces were too small for me so I glued thin plastic sheets into trailing edges of them. This model flies much better with these extra sheets and turns tight corners.

Most modelers who do detachable wings join the wing to the bottom of fuselage. It is easy to do, but I decided to join the wing to fuselage topside like Stanislav Cech from Czechslovakia. This is

a bit harder to do but thanks to this I could change the control system ratio without demounting the wing from the fuselage. I have to take away the cover (casing) over the wing only. So I spend one minute only to change control system ratio.

Note: Custom foam wings are available from Superwings, Ltd., 422 Wentworth Ave., Battle Creek, Michigan 49015. Write for details, or call: (616) 965-5293.

The mounting system fuselage-wing must be done very strong and exact, without any gaps. I did it when the fuselage was almost ready with bottom sheet and up block. Then it was cut for mounting system of wing. When this work was done I glued the stabilizer into fuselage and put in the pushrod. Zero error alignment is a must to assure a contest winner, as cock-eyed stunters never seem to win the goodies. So I always check everything repeatedly and tack-glue with five-minute epoxy, and check once more.

Maybe side-mounted engine does not look as fine as down-mounted in competitive stunter but it is much easier to operate. I don't have to invert my model for start. The venturi hole is higher over the ground so it is better for engine's life. One thing is important: As you can see the center line of tank is about 1/8 inch over the center line of engine. The ST46 has the venturi also about 1/8 inch to the right so the center line of tank should be about 1/4 inch over the fuel hole in spray bar!! Thanks to Claus Maikis for information about this problem. Thus the hole for tank should be larger for adjusting the tank location. The rpm of engine should be the same during level or inverted flight.

The real key to top performance is the engine-tank-propeller combo in a straight, light construction. My favorite engine is ST 46 reworked by Vic Garner; light and powerful. Thanks to my American friends Stu Richmond and Earl Poynter that helped me with it. I am not a prop-man but I tried many different props to get constant speed in the maneuvers, i.e. three

blades 11-6, 11-5, 11-5.5, 10-6 or two blades Zinger 12-6, Rev Up 12-6, and in the end narrow and very light prop 12.5-6. This last one is the best for this model with this engine. I must tell you my other models with the same engine need other props—my famous L-18 Maluch flew best with 3-blade 11-6 or 10-6. Thus selecting the best prop to model and engine set takes about twenty flights or even more.

My ST 46 likes to get fuel from simple uniflow tank. There is the baffle about 1/4 of the length from the rear and the pickup tube ends just short of the baffle. The baffle is perforated with six 1/8-diameter holes with a slightly bigger hole exactly in the edge of the wedge. Pressure from silencer is necessary.

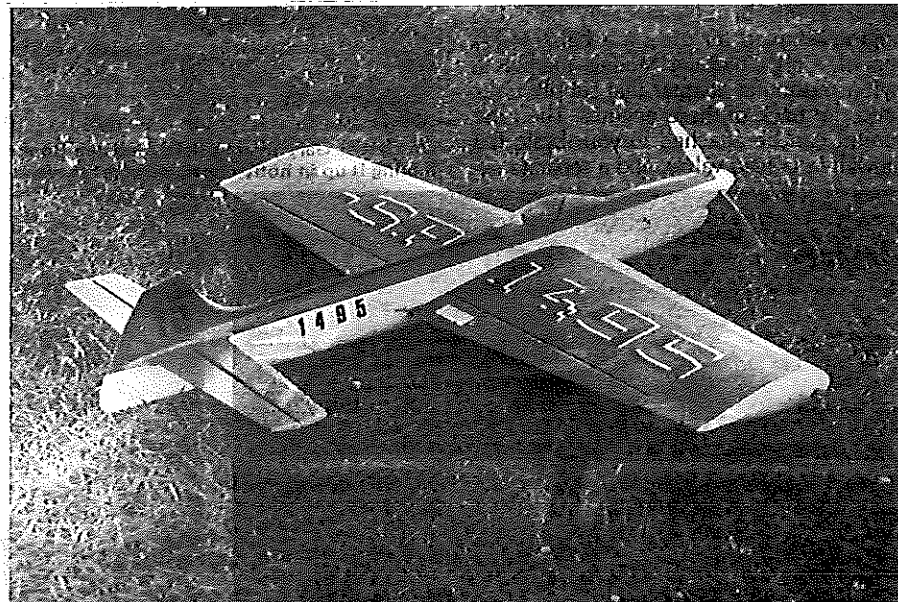
During the first few flights I do two things. First tweak the flaps, if needed, to get the wings parallel to the ground, and second adjust the leadouts so the model is flying with the lines perpendicular to the fuselage. Next I start to do square corners, triangle maneuvers are the best in my opinion, and add nose weight or tail weight (much worse in my opinion).

Of course, every practice-adjust flight I do with my friend who looks at the model during flights and tells me what he notices. To get good tip weight I do many hourglasses. The up corners of this maneuver tell me much about tip weight. If the outboard wing drops on these hard corners I should take out some tip weight, if it is not dropping I try to add some tip weight.

The best lap time for this model and me as a pilot is 5.5 seconds with 64-foot lines. My handle spacing is 4-3/4 inches.

If you decide that the Voyager will be your next stunter you will find that it is a very good model in extreme weather condition, without or with strong wind.

If you should run into a snag, or have a few comments about the Voyager I would be most interested in hearing from you. Piotr Zawada, Osiedle Przyjazni 22 N m. 141, 61-680 Poznan, Poland.



Piotr Zawada's earlier L-15, precursor of the L-20B Voyager. The L-15 won for Piotr the Nograd Cup F2B in 1980. Streamlining and design refinements were yet to come. Compare with L-20.