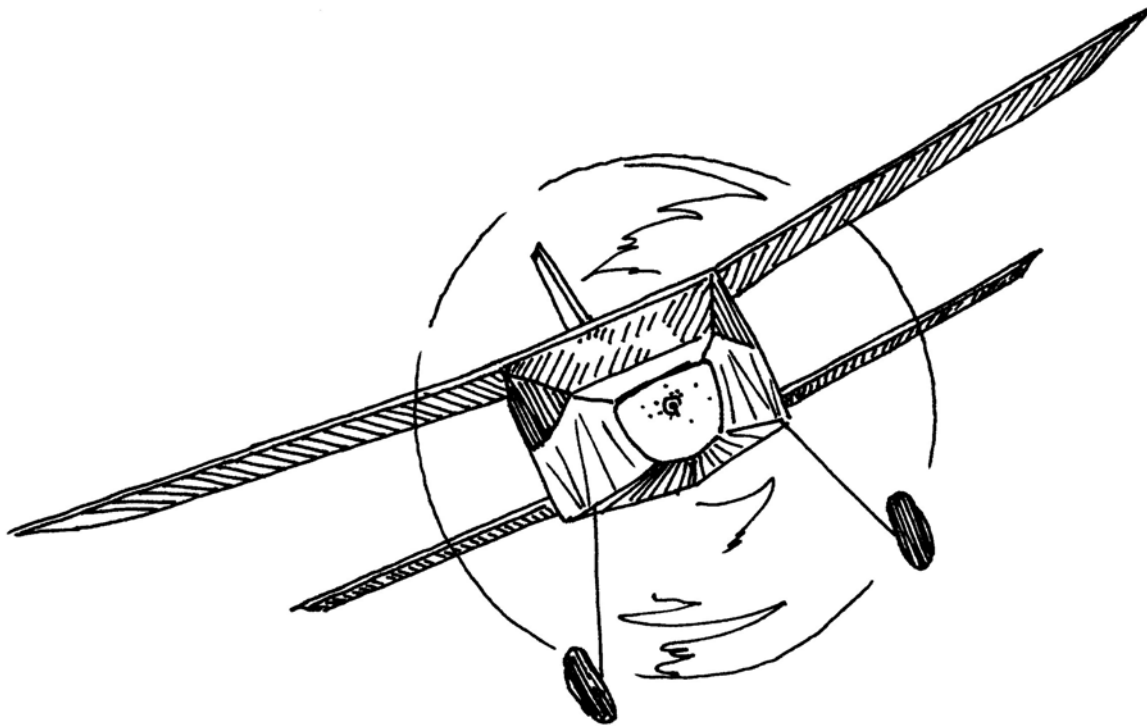


INDOOR

NEWS and VIEWS
ISSUE # 118

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Spring, 2006

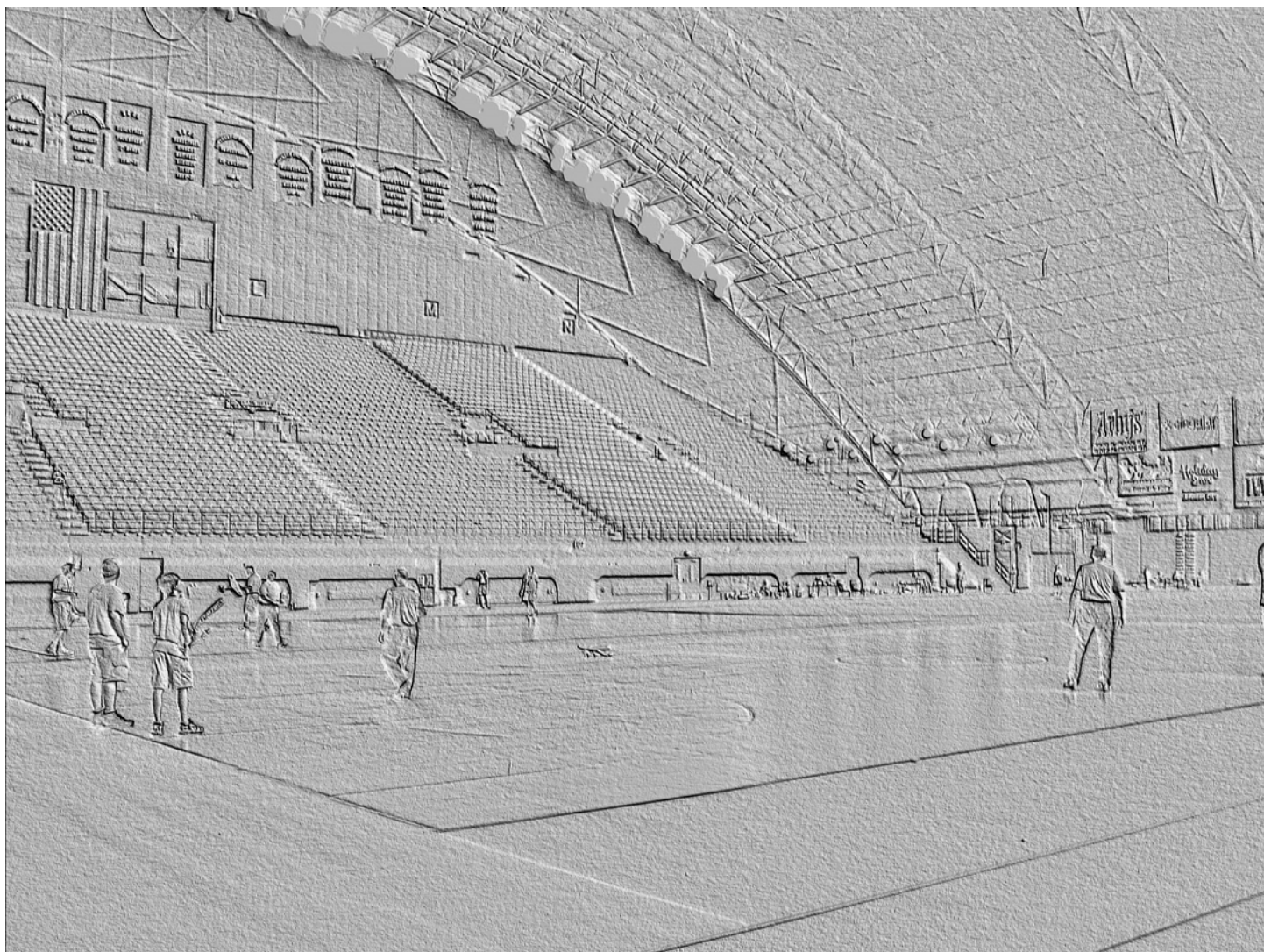


CLIP ART
by
Steve Gardner

ISSUE # 119

Summer, 2006

The Summer Contest Issue



From The Editor's Desk

As usual, we are getting this issue out a little later than planned, which is entirely my fault. Work picked up steam this summer and I have not had as much time as I hoped. However, there are some exciting things that have been completed. First, as most of you know, we now have a dedicated INAV website at www.indoornewsandviews.com, thanks to Jeff Hood's expertise and hard work. We hope this website will allow for better communication with our subscribers, and provide a one stop solution to account management and easy downloads of back issues.

This is the summer contest issue, and we have results from USIC, Kibbie, Lakehurst, and the Dorcol Cup. We have supplemented the results with pictures, and a number of winning designs from this summer's contests. Many thanks to those who took the time to draw up and share their designs. Hopefully, you will all find this issue interesting and informative. While we know some of our EU subscribers aren't terribly interested in the results of US competition, I'm afraid we only have the results from one European meet, submitted by Slobodan Midich. One of the US juniors, and all around nice guy, Nick Ray submitted an interesting piece on dying OS film, his blue ministick definitely caught a lot of eyes at USIC.

There are a couple of corrections from the last issue. First, Slobodan Midich's name was spelled incorrectly in the great 35cm article he wrote. Second, the majority of the very nicely drawn diagrams from Phil Alvarez's article did not make it into the issue. The corrected article may be downloaded in the free section of the INAV website at http://www.indoornewsandviews.com/files/downloads/phil_on_props.pdf. Our apologies to both of these fine gentleman.

While the transition of INAV has been a little bumpy, we seem to be getting a handle on it and hope to keep improving and putting out a quality newsletter. After some miscommunications, the basic structure is as follows – I am the Editor, and Carl Bakay and Jeff Hood are the Co-Editors. Put more simply, they do all the hard work. Bill Gowen and Nick Aikman are our Contributing Editors and go-to guys. A special thanks to all who contributed to this issue, and Jeff H in particular for handling all the formatting. Our next issue is going to be our FIL review, and we are still looking for articles, plans and photos so please send us what you have.

Best regards and good flying,

- Tony Pavel

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Contributing Editor - Nick Aikman, U.K.
Contributing Editor – Bill Gowen

Indoor News and Views is an open forum presenting ideas, opinions, model designs and techniques for the indoor community. Unless specifically stated, INAV does not offer any opinion as to the merit of published work, nor does it endorse any products or services advertised herein.

USIC 2006

WEDNESDAY, MAY 31ST

Intermediate Stick

Name	AMA #	1	2	3	4	5	Best	Place
Harlan, Ray	131	34:08	36:35				36:35	1
Loucka, Larry	1210	35:07	11:10				35:07	2
Leppard, William R.	93740	26:36	31:33				31:33	3
Tellier, Fred	Can9125	7:39	29:34	27:39	24:31	27:41	29:34	4
Kagan, John	469254	29:15					29:15	5
Barker, John	2095	21:38	22:20	23:21			23:21	6

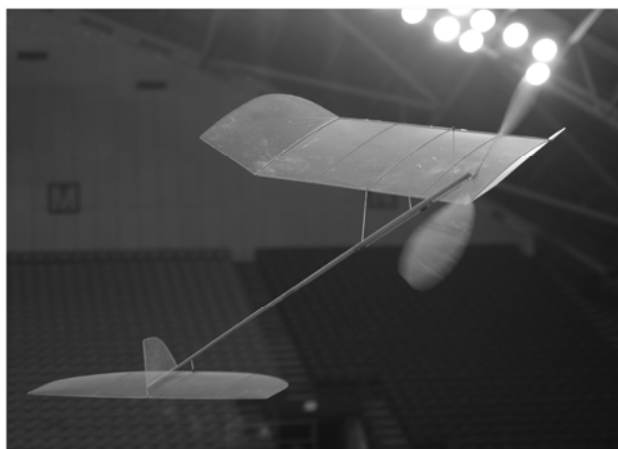


IHLG

Name	AMA #	1	2	3	4	5	6	7	8	9	Best	2nd Best	Total	Place
Lewis, Jim	119	22.0	61.0	69.0	72.0	62.0	7.0	78.0	74.0	74.0	78.0	74.0	152.0	1
Boehm, Bernard A.	92567	54.7	53.2	56.8							56.8	54.7	111.5	2
Krempetz, Kurt	69866	54.1	48.7	53.5	47.7	55.9	52.2	45.9	42.7	54.7	55.9	54.7	110.6	3
Peterson, Richard	151145	23.3	7.7	25.2	27.3	27.4	7.6	7.7	30.3	12.5	30.3	27.4	57.7	4
Nunez, Jonathan ***	726193	22.0	22.5	20.3	19.5	21.9	20.0	19.3	22.6	21.4	22.6	22.5	45.1	5
Rangwalla, Akil	761665	28.5									28.5		28.5	6

F1D (Wed. and Thu.)

Name	AMA #	1	2	3	4	5	6	Best	2nd Best	Total	Place
Brown, Steve	128759	29:03	31:16	34:07	34:49			34:49	34:07	68:56	1
Kagan, John	469254	34:11	24:00	31:21	34:00	33:23		34:11	34:00	68:11	2
Richmond, Jim	4936	32:23	32:20	32:28	34:28			34:28	32:28	66:56	3
Tellier, Fred	Can9125	9:01	32:15	30:17	28:08	16:02	31:36	32:15	31:36	63:51	4
Sova, Tom	473169	30:36	7:46	29:57	30:05	30:53		30:53	30:36	61:29	5
Zaluska, Max	774565	26:50	29:36	28:35	28:52	28:50		29:36	28:52	58:28	6
Raymond-Jones, D. C.	13157	20:19	24:08	24:54	16:57			24:54	24:08	49:02	7
Olshefsky, Peter	Can864L	18:00	20:58	15:35				20:58	18:00	38:58	8
Barker, John	2095	18:20	17:33					18:20	17:33	35:53	9
Sanborn, Brett	748651	29:57						29:57		29:57	10
Iacobellis, Tom	6698	24:32						24:32		24:32	11



Standard Catapult Glider

Name	AMA #	1	2	3	4	5	6	7	8	9	Best	2nd Best	Total	Place
Krempetz, Kurt	69866	85.1	75.6	85.0							85.1	85.0	170.1	1
Warmann, Robert C.	187	79.5	43.1	83.7	83.3	62.4	14.5	61.3	81.7	83.7	83.7	83.7	167.4	2
Schlarb, Bill	46614	79.8	77.2	80.2							80.2	79.8	160.0	3
Schlarb, Ralph	322352	77.4	76.2	78.5							78.5	77.4	155.9	4
Jessup, Artie	10269	25.1	61.6	15.0	74.4	76.5					76.5	74.4	150.9	5
Lewis, Jim	119	59.0	59.6	69.9	7.1	68.7	22.2	70.9	10.0		70.9	69.9	140.8	6
Krempetz, Kenneth	11951	67.0	70.5	69.3	69.6	61.0	69.9				70.5	69.9	140.4	7
Peterson, Richard	151145	67.0	63.0	53.0	3.0	71.0					71.0	67.0	138.0	8
Krempetz, Ken	559200	46.6	62.2	26.2	70.0	60.1	31.0	37.0			70.0	62.2	132.2	9
Batte, Thomas C.	17842	62.2	62.5	55.5							62.5	62.2	124.7	10
Nunez, Paul ***	787832	36.0	33.1	32.8	57.6	35.9	38.5	23.8	40.7	40.7	57.6	40.7	98.3	11
Sholder, Barry	55573	39.1	41.9	41.4	36.1	40.5	40.1	31.4	39.9	43.4	43.4	41.9	85.3	12
Nunez, Jonathan ***	726193	25.2	31.1	31.2	34.5	34.8	36.7	38.8	39.1	11.8	39.1	38.8	77.9	13
Jenkins, William	22121	28.0	31.6	34.8	31.0	32.1	25.8	33.5	38.6	34.5	38.6	34.8	73.4	14
Van Dover, Abram	894	6.1	6.0	4.0	23.3	21.4	6.1	12.3	22.5		23.3	22.5	45.8	15

Unlimited Catapult Glider

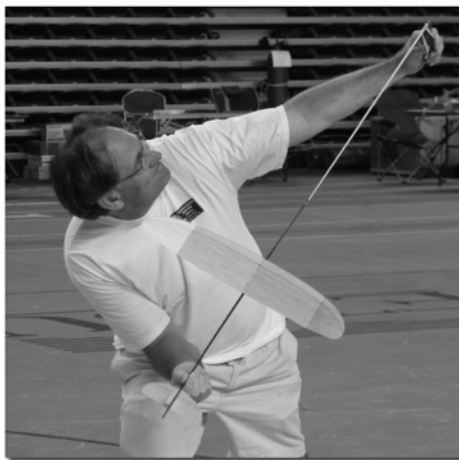
Name	AMA #	1	2	3	4	5	6	7	8	9	Best	2nd Best	Total	Place
Krempetz, Kurt	69866	65.5	79.9	35.0	71.7	90.4	85.6	89.9			90.4	89.9	180.3	1
Boehm, Bernard A.	92567	79.9	82.8	73.9	83.6	78.8					83.6	82.8	166.4	2
Lewis, Jim	119	82.1	36.6	78.8	79.1	80.9	76.7				82.1	80.9	163.0	3
Schlarb, Bill	46614	78.8	81.2	80.8							81.2	80.8	162.0	4
Schlarb, Ralph	322352	78.5	78.0	79.0							79.0	78.5	157.5	5
Jessup, Artie	10269	78.5	25.9	9.6	57.5	62.8	22.7				78.5	62.8	141.3	6
Krempetz, Ken	559200	67.9	70.9	69.8							70.9	69.8	140.7	7
Peterson, Richard	151145	59.0	69.0	70.0	8.8	40.8					70.0	69.0	139.0	8
Krempetz, Kenneth	11951	64.6	69.0	67.5	28.9						69.0	67.5	136.5	9
Batte, Thomas C.	17842	68.8	63.2	64.0	65.6						68.8	65.6	134.4	10
Nunez, Jonathan ***	726193	42.7	44.2	42.2	42.6	35.7	44.7	33.8	40.9	39.6	44.7	44.2	88.9	11
Nunez, Paul ***	787832	41.1	41.7	34.5	39.0	37.6	36.7	39.5	38.4	29.5	41.7	41.1	82.8	12
Jenkins, William	22121	26.6	27.0	28.0	36.1	39.7	35.8	37.4	35.7	40.9	40.9	39.7	80.6	13

P24 Mass Launch

Name	AMA #	Time	Place
Rash, Fred	63458	5:12	1
Diebolt, John	5286		
Whitford, Dale H.	7453		
Nystrom, Hank	71542		
Bakay, Carl	478659		
Johnson, Tem	16707		
Warmann, Robert C.	187		
Carney, Bill	83252		

Round The Pole

Name	AMA #	1	2	3	4	5	Best	Place
Slusarczyk, Chuck	2643	4.0	3.5	2.2	2.8	2.1	2.1	1
Italiano, Tony	2386	4.0	2.7				2.7	2
Diebolt, John	5286	3.1	2.9				2.9	3



INDOOR
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Issue #120

Winter 2006

F1L Issue



Mr. EZB, Wally Miller

FROM THE EDITOR'S DESK

Dear Friends and Flyers:

Welcome to the Winter 2006 issue of INAV – the “FIL Issue.” Following the positive response to the 35cm Issue, we hope to continue the “one class” focus in INAV. As long as we can get enough material, we will try to devote a substantial portion of each issue to a particular model class. Speaking of material, let me thank the contributors who made the FIL focus of this issue possible: Laurie Barr, Stan Chilton, Larry Coslick, Akihiro Danjo, and Jeff Hood. While I have mentioned this before, a special thanks and tremendous gratitude are due to Jeff Hood, who not only wrote two great articles for this issue, but is also responsible for a lot of the exciting things we are trying to do with INAV. Jeff single handedly built the website (including the subscribers only section which has received great reviews), updated our subscriber database, and is spearheading an effort to make hardcover volumes of back issues available at affordable prices. All this with your editor constantly calling him up and saying “Jeff – that is great. Can we tweak it just a little by...”

We also have some great contest coverage from our “European Correspondents” Voja Stojkovic, Fernando Haro Martinez, and a mind blowing F1D plan by Lutz Schramm (check out the curved wing without any bracing wires). Ray Harlan and Tom Sova give us a great report of the 2006 World Championship.

As noted above, we have been updating the subscriber database. INAV has been shipping issues to people whose subscriptions recently expired. Moving forward, everyone's expiration date will be printed on their mailing label. This issue will go out to everyone who expired in the last year, and then we are going to have to tighten up the mailing list. So, if you like what we're doing/trying to do, please consider renewing. Right now, we have approximately 100 fully paid USA subscribers, 50 recently expired USA subscribers, and about 25 paid foreign subscribers. To make mailing the most cost efficient, we need 200 domestic subscribers to maintain a bulk rate. We plan to have a subscription drive, and hope that word of mouth is our best advertising.

The editors are aware that steady output of new issues is the main draw for subscribers, and we are doing our best to maintain a quarterly schedule, and provide valuable resources through the website. So spread the word, and send us any suggestions that you think could improve the newsletter. Remember, INAV belongs to the indoor community; the past, present and future editors are merely taking care of it along the way.

Speaking of community, we received a generous general donation from Gene Joshu and Roy White. We also received a donation for two Junior subscriptions from Anthony “Buzz” Buzzoni. So if you know of a dedicated Junior with limited means, please send us a short email.

Alright, I think I've yapped for long enough, so thanks to our editors for their hard work, and our subscribers for their submissions and support. We hope you enjoy this issue and are excited to move forward with INAV.

Best regards and good flying,

Tony Pavel

PS – We are now looking for articles for our next issue, which will focus on Props.

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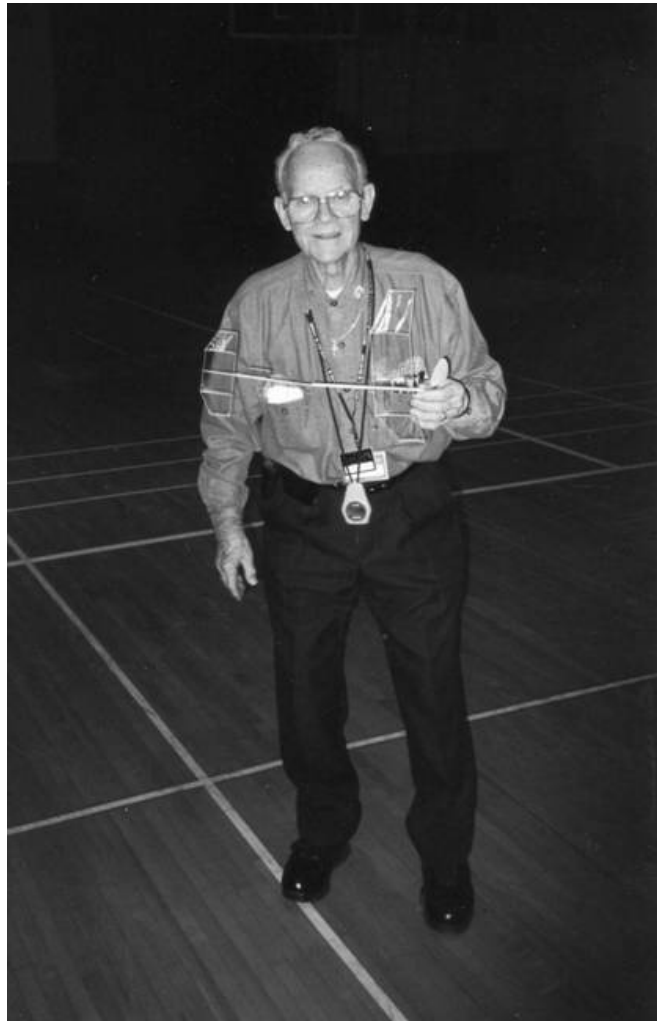
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IN MEMORIAM

I'm writing to you to report the death of Charlie Stiles of Philadelphia, PA. He was 84 years old and passed away on 9/11/2006 from renal failure, and had been ill for nearly a year. Charlie was my father in law and has been building and flying indoor models since the mid-1930's. In fact, while looking thru his vast collection of tools, rubber, and wood, I found his first winder that he made in 1934 from an old clock movement. I know he had subscribed to INAV for many, many years. Retired, he was an electrical engineer by profession, and was the consummate builder. Always the family man, he had little free time to concentrate on major contests, but was a respected competitor in the Philadelphia area. Charlie was a kind, generous person who was known to hand over a prized ship to an astonished admirer, saying "I can build another one." And build he did. He left behind boxes of paper and microfilm ships, dozens of props, miles of rubber, fixtures and jigs with express instructions to donate all of it to his local club. Although I don't fly, I often accompanied him as appointed gopher and winder, and witnessed the joy in his face as his released his ship and watch it corkscrew towards the ceiling. If you knew Charlie, you liked him. If you didn't know him, you missed a wonderful human and a great builder.

Sincerely,
Tom Hybiske



ON EZB's AND F1L's

F1L "EZB" ORIGINATOR, WALLY MILLER



Several years ago, some of the Kibbie Dome regulars thought it would be a grand idea to incorporate a 2 day F1L EZB contest within their annual 4 day meet. It would work as follows: on day 2, you could fly three official flights, then three more on day 3. The total on your best 2 flights would equal your score. No extra entry fee of precise rounds, just the regular fly-when-you-want-to.

At this point in time, not one of us had ever built an F1L. We all faced the same problem of how to best distribute the weight for maximum strength and efficiency.

EZB's and many other indoor models fly great with the wing positioned well forward; this model would not be an exception. A moderately long motor stick dictated a shorter than normal boom and a 49% lifting stabilizer. Next, taking into account the larger and stiffer wing spars, the flat section of the wing was extended one inch longer than I use on a AMA EZB, plus a much thicker 6% airfoil was implemented. The wing was covered with Y2K and the stab. with Y2K2.

Thanks to the efforts of Larry Coslick, as of Jan. 2005, this class is now recognized by the AMA for National record purposes.

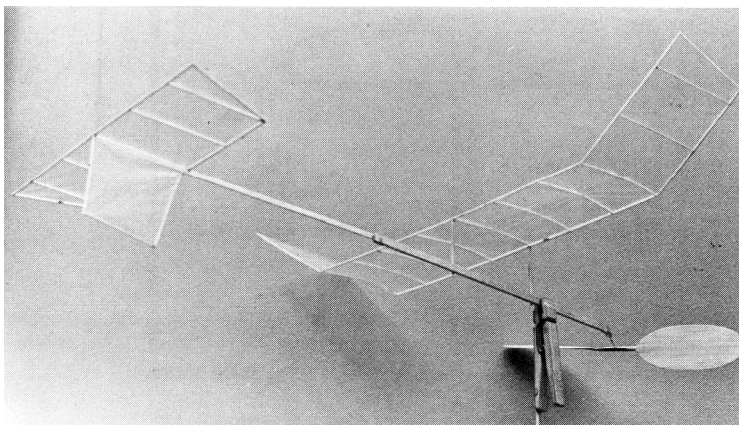
Good Times to All, Wally Miller

ORIGINS...

F1L started with EZB, and EZB started with the FAI indoor program. This photo is from the December 1974 issue of Model Builder. The construction is detailed in Ron Williams' book, and has its origins with Wally Miller and Stan Chilton. Beginner models in Ron's book were made entirely from 1/16 square spars, and "advanced" models from 1/32 x 1/16" wood.

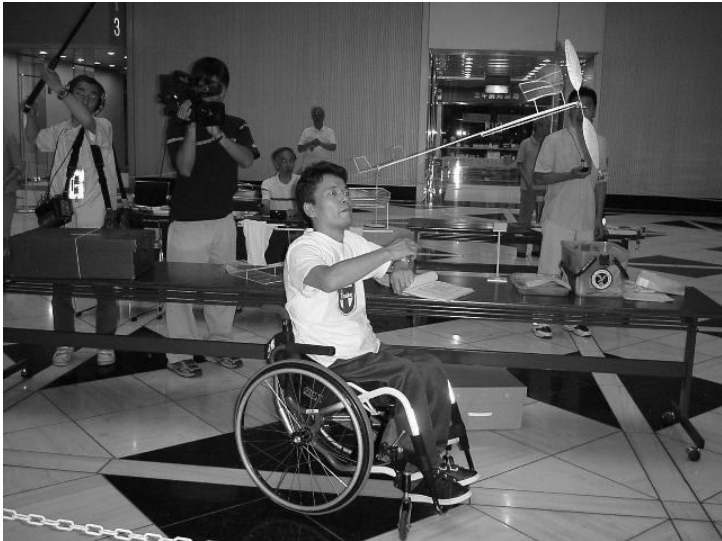
Co-Editor Carl Bakay built several of these straight from the plan when starting out in indoor modeling six years ago. A 2.2 gram model from Ron Williams' book covered with condenser paper managed a 4:55 in Florida's Gulf Breeze Recreation center, and a 2.1 gram version did an official 7:12, good for 27th place at the 2001 USIC at Johnson City. Very satisfying for a beginner, but Larry Cailliau won EZB that year with a flight four times longer.

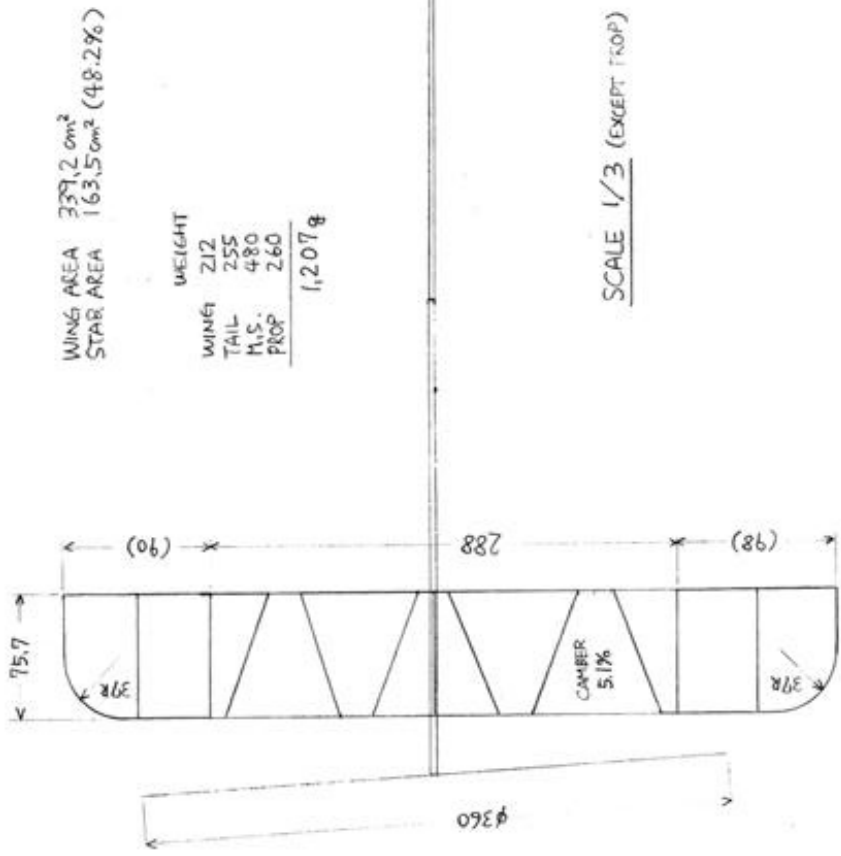
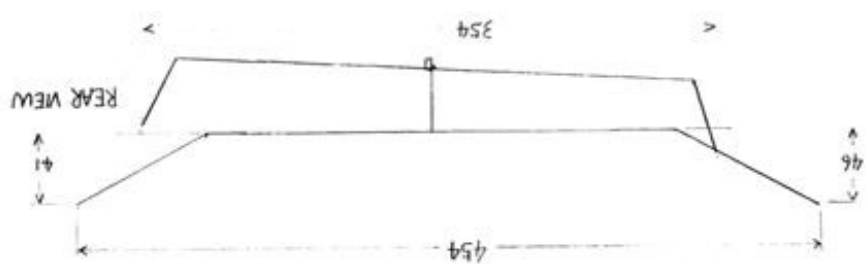
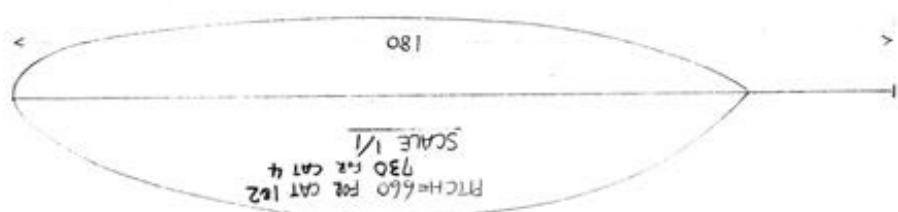
Moving on to all 1/32" square construction and Polymicro covering, the weight came down to 1.7 grams, and Carl got to break 10 minutes for the first time with a 10:32 at West Baden, Indiana in August of 2002. Built with careful attention to wood weights, trimming, and motor selection, this is still a good entry-level design for F1L flying.



WORLD RECORD CAT IV F1L FLIGHT - 32:22

11/08/2002 BY AKIHIRO DANJO IN THE ATRIUM OF THE SHINJUKU NS BUILDING IN TOKYO



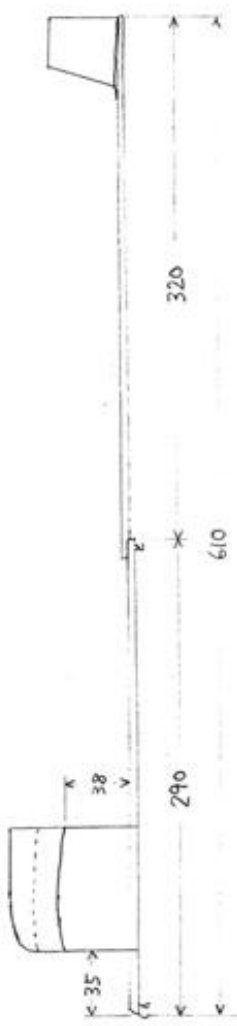


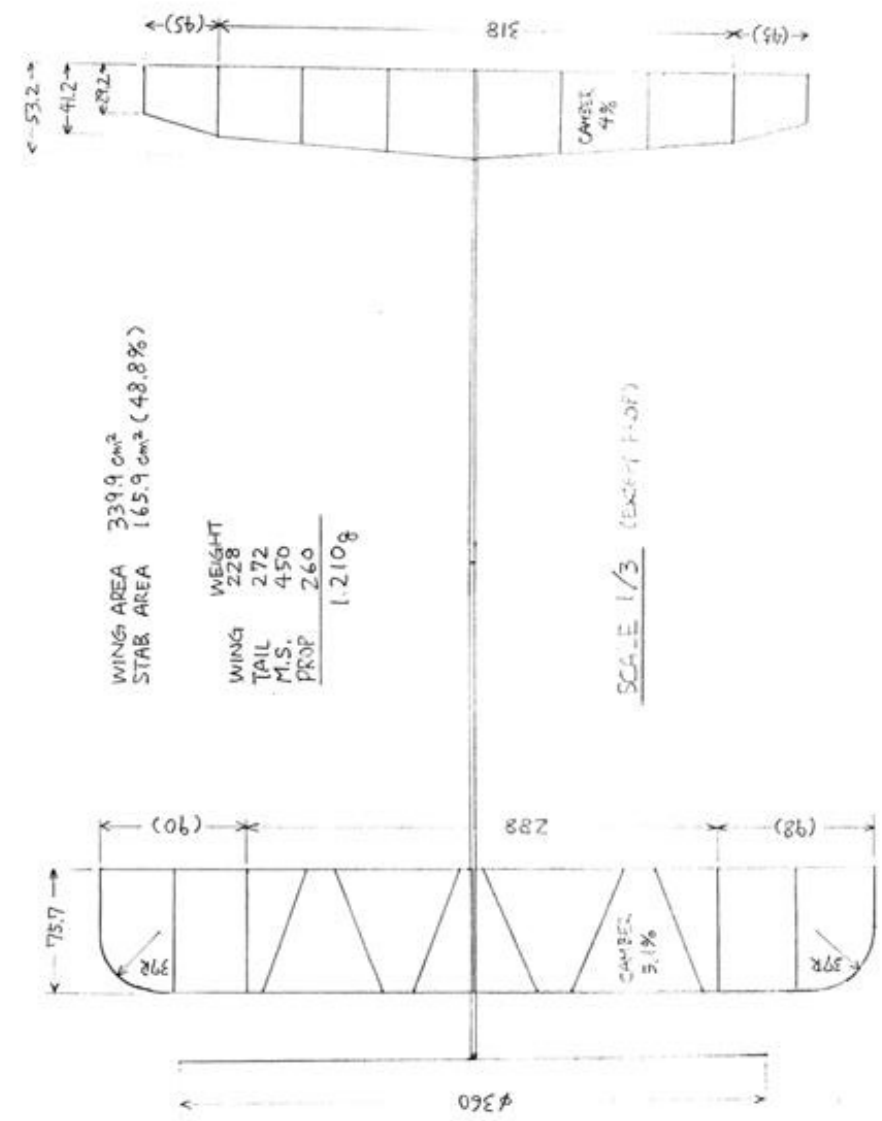
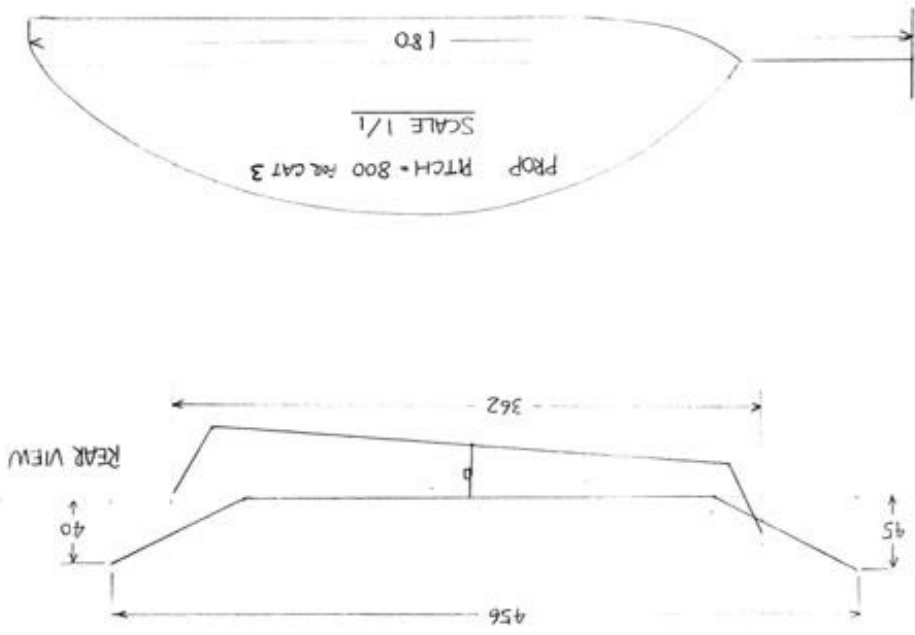
WING AREA 339.2 cm²
 STAB AREA 163.5 cm² (48.2%)

WEIGHT
 WING 212
 TAIL 255
 F.S. 480
 PROP 260
 1,207g

1 19:39
 2 20:36
 4 32:22
 FIL WORLD RECORD CAT

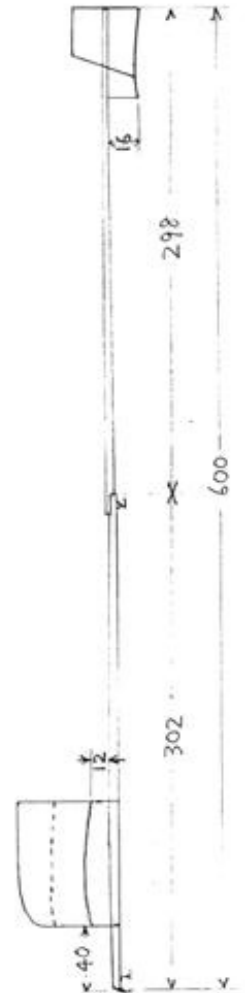
CLAIMANT	AKIHIRO DANJO
DIRECTING OFFICIAL	
NAC OFFICIAL	





F1L WORLD RECORD CAT 3 23:01

CLAIMANT	AKIHIRO DANJO
DIRECTING OFFICIAL	
NAC OFFICIAL	



CALCULATING MODEL WEIGHT

Larry Coslick

One of the challenges of building indoor duration models, particularly those classes that involve solid motor sticks, is building to a target weight. Experienced builders generally refer to previous construction notes when building a design, but when building a new class of model or if you are a beginner to indoor free flight, you might not have this information.

When FIL became an official AMA event in 2005, I wanted to add this event to my arsenal of indoor models. The first thing that I did was to drag out all of my issues of INAV to find out what wood sizes and densities the fliers were using on their FIL's. This is the classic method (other than sheer trial and error...) used, and usually takes a few models to get down to the target weight. This takes both time and material, so you might want to try my method of determining the finished weight of the new design before a single piece of wood is glued together. The advantage of this system is that it gives you the opportunity to adjust the weight of the component parts to meet the minimum or desired weight of the model. This system also works for classes like EZB, LPP etc. and on the more complicated models using Boron reinforced rolled motor sticks and Boron laced wing spars.

Experienced indoor builders generally have their favorite methods, but here are a few ideas for those that might be starting out. The first thing that is needed is a scale that will measure down to a resolution of .002 grams. Ray Harlan sells a good beam scale and the Tanita 1210 is a good choice for an accurate, digital scale. Study the plans and articles in "Indoor News and Views" and Lew Gitlow's book "Indoor Flying Models". These are great sources of information on everything, from selecting balsa to building techniques.

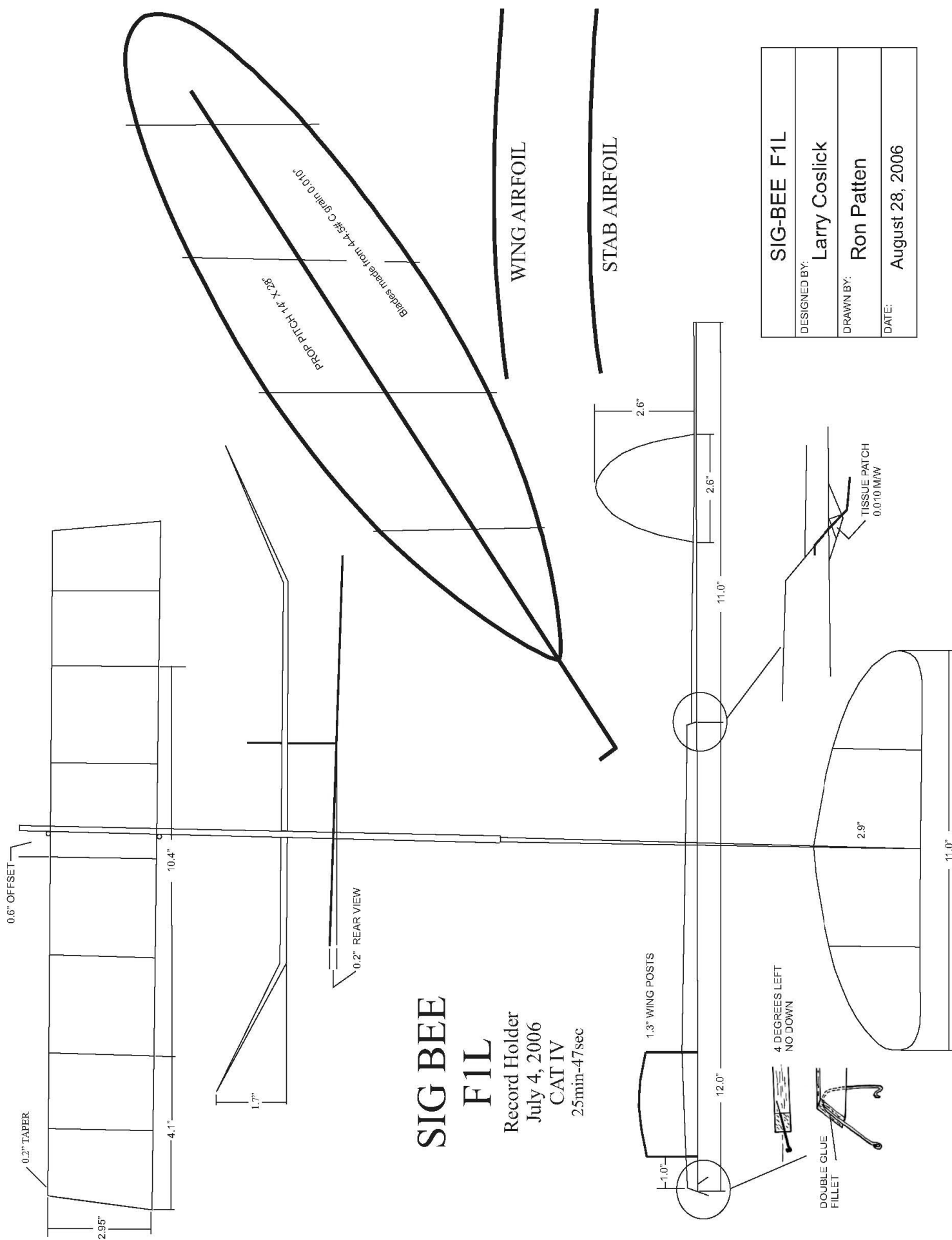
Start off by cutting out all of the component parts, using the wood sizes and densities from a source such as the ones mentioned above. Concentrate on keeping all of the parts behind the rear hook as light as possible. When cutting out the component parts, it will probably be necessary to cut them from several different sheets of balsa to find the lightest and stiffest pieces. Use a simple deflection gauge to determine the stiffest booms, wing and prop spars. After that, weigh each piece, and then select the lightest and stiffest piece. Keep accurate records on the weights, densities and deflections on each model that is built. Do this as each component part is being built because if you don't, it won't get done. Stab outlines can be built lighter than expected and try using thin .012" ribs for FIL stabs. Motor stick assemblies will usually include the weight of the thrust bearing, rear hook, wing posts or paper tubes. For an FIL, you can use my wood and density list to deduct the weight of those parts to get the approximate weight of the dry motor stick. Cut the straight spars to within one tenth of an inch of their overall length, and leave an extra inch on the parts that need to be bent around a radius. I cut ribs to within .050".

When making up solid wood prop blades, weigh and calculate what one square inch of the blade wood will weigh. Find the area of both prop blades so that you can get a pretty good idea of what the blades will weigh. This step is important because heavy prop wood can add a lot of unnecessary weight to a model. A good starting place for wood sizes and densities for an FIL would be .010 C grain from 4 to 4.5#.

To calculate the area of any irregular shaped outlines like a prop blade, here is a simple and effective method. First weigh a sheet of bond paper and divide by the number of square inches in the sheet to determine the weight of one square inch of paper. Then trace the outline on the same paper and cut it out and weigh it. Divide the weight of one square inch of paper into the weight of the cut out part. The results will give you the number of square inches of area in the blade. Use this procedure to determine the area of the flat flying surfaces such as curved wing tips and to figure the weight of the film. Make the prop shaft, spar and add two Teflon washers. Make up the thrust bearing and the rear hook along with any gussets: also wing posts and paper tubes.

To find the approximate weight of the glue (Ambroid or Duco) to construct the model, count all the glue joints and double them. Weigh a piece of paper or cardboard and apply a dab of glue for each glue joint and straight lines of glue to represent the joints to glue prop blade sections together. I pre glue rib and scarf joints before making the final gluing, and use aliphatic (carpenters glue) for dihedral joints and for attaching prop blades to prop spars. I don't pre glue aliphatic joints or the joints to glue prop blade sections together. Prop blade joints are overlapped and Acetone is used to activate the glue. Dry the paper and glue with a hair drier for about three minutes. then weigh the paper to determine the weight of the glue. I found out that it takes about .031 grams of glue for a complete FIL. More than half of the glue weight will be used on the prop. Y2K-04 or OS film is the covering of choice for an FIL and it weighs approximately .050 grams for one hundred square inches of film. The weight of the adhesive will vary on how it is applied. Several years ago, I made a test on different adhesives to attach plastic film to EZB wings and found that 77 spray and thinned rubber cement held the best and weighed about .004 grams. Weigh all of the models parts at one time, separate from the prop pieces. Add in the weight of the film, film adhesive and glue.

If you are just starting out, hook up with someone that is an experienced indoor free flight modeler. They can save you lot of time because there are a lot of procedures and techniques that the books don't cover.



SIG BEE F1L

Record Holder
July 4, 2006
CAT IV
25min-47sec

SIG-BEE F1L
DESIGNED BY: Larry Coslick
DRAWN BY: Ron Patten
DATE: August 28, 2006

SIGBEE SIZES AND DENSITIES

WING 6# TO 6.5# A Grain

L/E Spar .035 x .085 > .035 x .060 x 5.5" long	2	.040g		
T/E Spar .035 x .075 > .035 x .060 x 5.5" long	2	.036g		

Make scarf joint to join pieces

L/E Spar deflects ¼" with .740 gram weight at 4" on deflection gauge. See Hobby Shopper EZB article for deflection gauge detail

Wingtips 5#

L/E Wing Tips .035 x .060 > .035 x .030 x 4.5"	2	.024g		
T/E Wing Tips .035 x .060 > .035 x .040 x 4.5"	2	.024g		
Ribs 5.3# .026 x .045	7	.044g		
Ribs, Tip 5.5# .035 x .040	2	.012g		
Glue, Ambroid		.006g		
Y2K 04+ Adhesive		.030g		
Paper tubes, Rectangular .035 x .062 ID	2	.010g	TOTAL	.226g

STAB 4.3# A grain

Outline 4# .028 x .032 x 24" 4#	1	.035g		
Center Rib 4.5# .022 x .032"	1	.004g		
Outer Ribs 3.9# .012 x .032"	2	.004g		
Glue		.002g		
Y2K 04 + Adhesive		.015g	TOTAL	.060g

FIN 4#

.030 x .030 x 10"	1	.006g		
Glue & 77 spray		.002g		
Y2K 04		.003g	TOTAL	.011g
Boom tapered stock .1 x .125 > .035 x .080 x 11" - Boom deflection .75" at 9.4" using a 1.4 gm weight		.105		
Motor Stick 4# .125 x .225 > .125 x .3" x five inches from the front of the thrust bearing > .125 x .230 x 12"		.494g		
Thrust Bearing .012" Music wire		.016g		
Rear hook .010 MW with .020 gusset and tissue patch, see plan		.008g		
Wing Posts 9# Rectangular .035 x .062 x 1.3"	2	.015g		
M/S, boom Fin, T/B, R/H, + .006g glue			TOTAL	.655g

Prop Data - 14x28

C grain .010 x 1.2 x 18" 4.5#		.252g		
Prop blades 7.1 Sq in. ea. — 2 .166	2	.166g		
Glued 174		.174g		
Prop spar double tapered	2	.056g		
.068X.080>> .038X.040X7.25"— 2 .056				
Deflection 1/2" at 6" with a .270 gm weight				
Glued — .057		.057g		
.012MW prop shaft and 2 washers — Carpenters glue to attach blades		.013g	TOTAL	.250g

Deflection gauge. If you use my deflection gauge, the readings are taken from the 0 mark on the test piece holder to the end of the 0 line on the movable scale tower.

Model Weights	Wing	M/S Assembly	Stab	Prop	Ballast	Total
Grams	.226	.655	.060	.250	.015	1.206
Ounces	.0080	.0231	.0021	.0088	.0005	.4025

SPIRIT F1L - STAN CHILTON

I had been following the popularity of FIL overseas for some time. It appeared to be a fun event so I decided to build one in early 2004.

In researching existing FIL designs it was apparent that good FIL's were much more than weighted up conventional EZB's. I arrived at an overall design that included features of several successful English designs and some from my own experience and construction.

First test flights in our local 23 ft. smooth ceiling site showed really good performance except flight speed seemed excessive. The designed airfoil template was 4% so a 5% airfoil was tried. Flight time on 1/4 motors showed an increase in flight time and slower flight speed. A 6% airfoil was then tried with no improvement so I settled for the less drag of the 5% airfoil.

Many different props were built and tried ranging in diameter from 13" to 15"; various pitch distributions, and some with spar on top of the blade as well as conventional blade on top of spar. All blades were .012 sheet with the grain running perpendicular to the spar. The 15" diameter props gave slightly better times.

One-quarter motor flight times were close to 5 minutes, very stable and were made with launch torque levels of .30 up to .40 inch ounces. At .40 torque the model hit the ceiling so hard it was breaking props although the model was handling the torque well. Almost no turns were backed these hi-torque launches.

Testing continued but launch torque was mixed at .30 to save props. One quarter motor flights were now reaching 5 1/2 minutes.

I was aware that the FAI world record for Cat I was 19:39 which seemed within reach. A world record sanction for FIL was applied for to AMA along with an FAI stamp, but access to our site is not possible during the summer.

The next flying opportunity was West Baden, Indiana, in August 2004. Fortunately all the world record sanctions and AMA notification was already in place.

After one day of flying mini stick I started flying FIL. After several 1/4 motor flights were made to establish an optimum motor size for the conditions, a conservative official flight was made of 20:43. With the existing world record being 21:23 it was an encouraging beginning. By Sunday afternoon the model had turned in the following official timed flights, none of which required steering.

1. 20:43
2. 19:14
3. 20:10
4. 21:28 *
5. 16:55 **
6. 22:32 - FAI Cat III world record, Aug 15, 2004

* The 21:28 flight exceeded the existing world record by 5 seconds, but was improved to 22:32 a short time later.

** The 5/99 motor used for this flight was de-laminated, and it did not perform well (climbing to 50 ft) and was caught at about 5 ft height.

Some official FIL timing calls for a 2 flight total, in this case the best 2 flight total was 44:00 (22:32 plus 21:28)

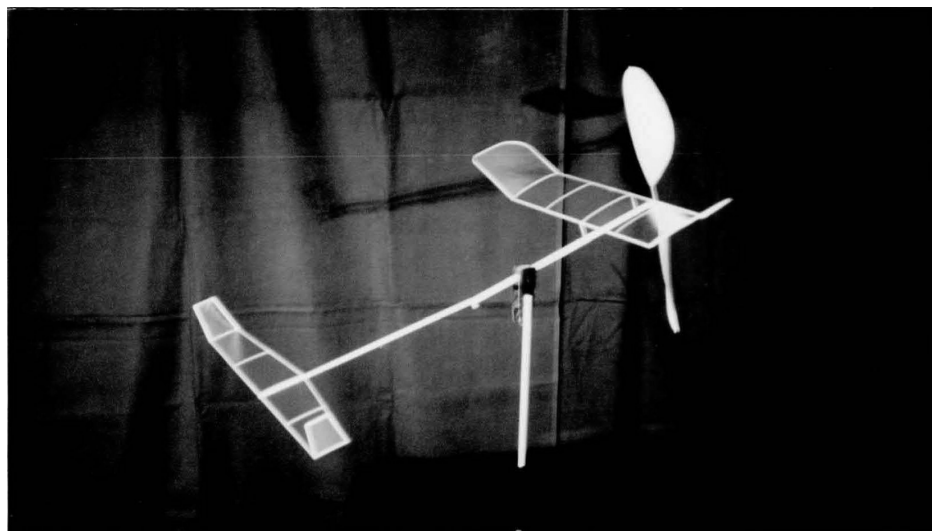
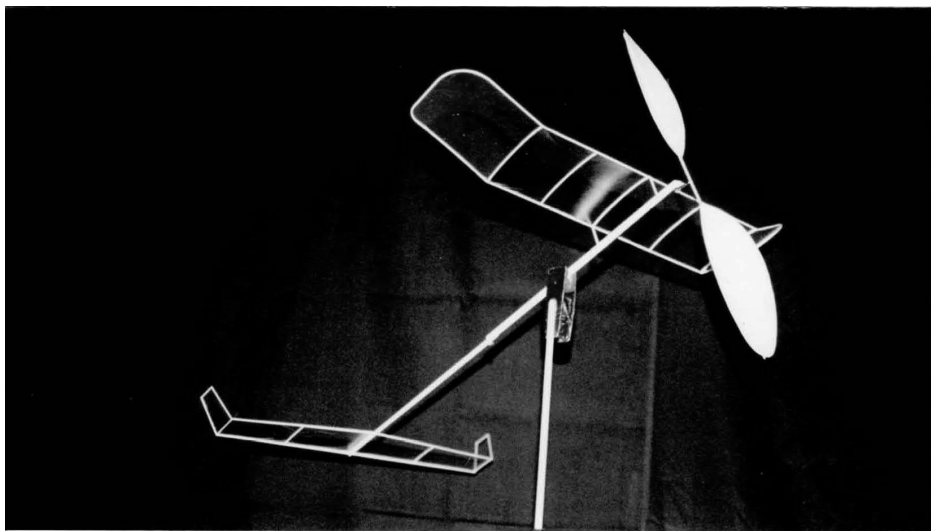
At the time of these FIL flights (Aug 2004) FIL had been approved by AMA as an official event but with an effective date of January 1, 2005. The current AMA Cat III record is 17:21.

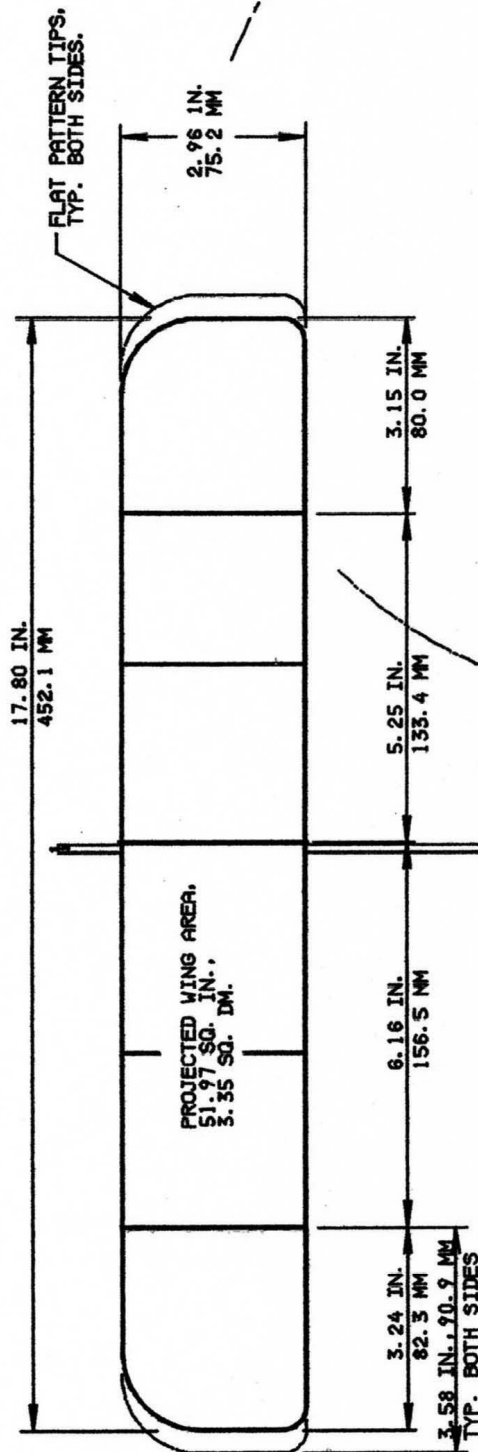
I need to express my thanks to the 'BEAMS' (Boeing Employees Aerodynamic Modeling Society) now officially Spirit Aerosystems, Inc. for sponsoring monthly flying sessions in a fine Cat I site. These flying opportunities allowed me to fine tune my FIL so I call my FIL "Spirit".

I am also fortunate to live in the same town as Jim O'Reilly who is widely known in outdoor Free Flight for his excellent CAD drawing of old timer and other free right models. Jim is also an outstanding indoor flyer. When I need a good three view plan of a model, I just take the entire assembled model to Jim and he draws a dead accurate 3-view for me.

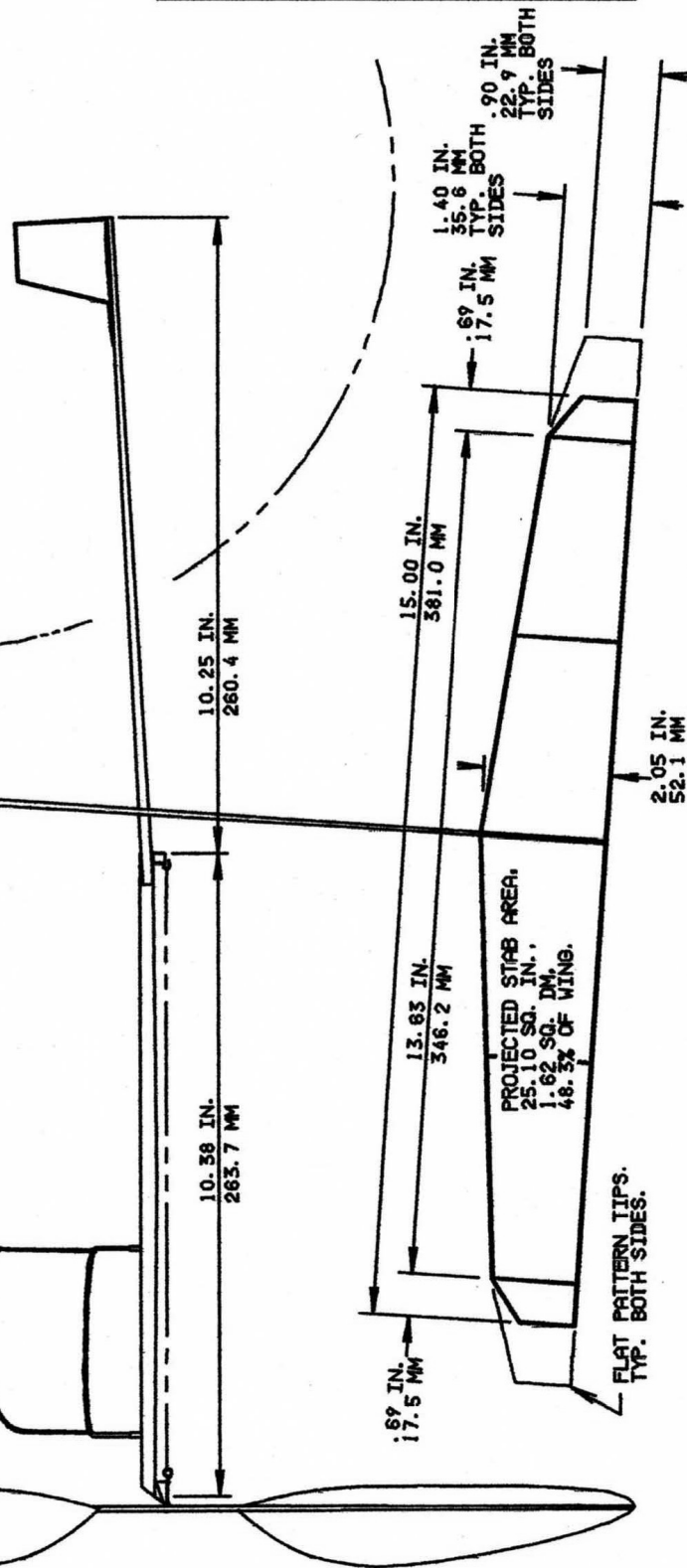
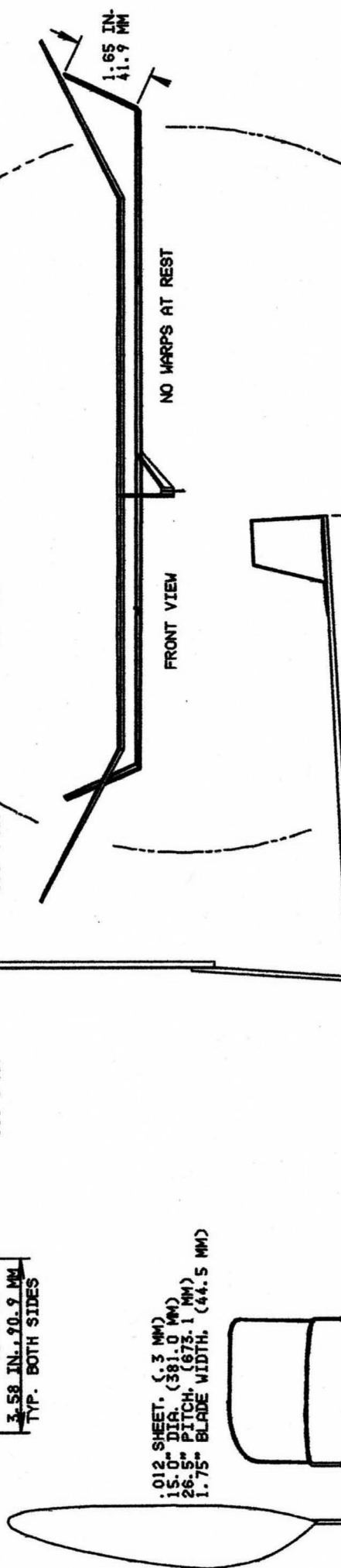
SPIRIT CONSTRUCTION NOTES

Motor Stick		.115 x .210 - .115 x .252 - .100 x .203 (nose)	5.8#
Rear Hook and Front Bearing		.013 wire	
Tail Boom		.112 x .172 - .060 x .090	3.9#
Stab	LE and TE	.027 x .045 - .027 x .060 - .027 x .045	5.7#
	Tips	.028 x .028	
	Ribs	.025 x .031	
Wing (Y2K Film Covering)	LE and TE	.034 x .065 - .034 x .078 - .034 x .065	5.9#
	Tips	.030 x .060 - .030 x .033 - .030 x .060	5.9#
	Posts	.035 x .059	6.2#
	Ribs: Center and Dihedral Break	.027 x .047	5.2#
	Ribs: Intermediate	.020 x .035	5.0#
Prop	Spar	.075 x .060 - .028 x .028	6.0# A-Grain
	Blade	.010 sheet 1/4 Grain perpendicular to spar	
	Shaft	.012 wire	





.012 SHEET, (.3 MM)
15.0" DIR. (381.0 MM)
26.5" PITCH, (673.1 MM)
1.75" BLADE WIDTH, (44.5 MM)



RECORD FIL (E-Z B)

DESIGNED, BUILT & FLOWN BY
STAN CHILTON, AWA L30, AUG. 15, 2004,
WEST BADEN, IN (USA)

22 MIN., 32 SEC., CAT. 3, (15-50 M)

PREVIOUS RECORD, 21:23

HEIGHTS:

WING

BODY & TAIL

PROP

TOTAL:

POWER: 5/199, .053 X .042 X 15

2700 - 420 = 2280 TURNS.

150 REMAINING = 2160 TURNS, NET.

LAUNCH AT 17 INCH-OZ TORQUE

COVERING: PLASTIC FILM

Drawn: Jim O'Reilly, AWA 7739,
8-27-04 (FROM ACTUAL MODEL)

3/10 SCALE. ALL VIEWS ARE
TRUE (PROJECTED) VIEWS.

KNOW YOUR EZB (OR HOW TO BECOME AN EXPERT)

Laurie Barr

(From the 38th Symposium of the National Free Flight Society, 2005)

Flying an un-braced indoor model to the highest duration in high ceilings is not easy, and mostly misunderstood. The difference between low power flights in low ceilings, and the “real thing” in high ceilings, requires a proper understanding of the forces involved, what these forces are, and how to control them.

Many of you will have seen an otherwise reasonably built model, that on low power and descent, looks a terrific world beater. But wind it up, and many will twist and contort straight into the ground, or at best, race round and round at launch height before hitting the ground or stagger off to the right, nose up in a deep stall.

Indoor beginners will want to match the very low weights shown on drawings of record breakers, but without having superb Balsa, that weighs four and a half pounds per cubic foot, but performs like it is 6lb stuff, you will have no hope of being successful.

It is far better to have a structurally sound model a bit overweight, than have a structure that is inherently suspect, before you can start to get the maximum benefit from the advice given below.

This super wood is out there in the shops, but you will have to go to a fair bit of trouble, to sort the “Wheat from the Chaff”. Mostly this super wood is more useful in quarter inch thick planks; however 3/16ths & 1/8th is OK. We use the Jim Jones type of stripper, to produce strong, light and true spars and EZB motor sticks. We strip the spars to the thickness, and then

if we want tapered spars, we pass a tapered dummy ply or hardwood “wedge”, that has the length and degree of taper, you want the spar to be, in parallel through the stripper along with the selected spar stock. Out comes a tapered spar!

The day you find the magic wood, is pure

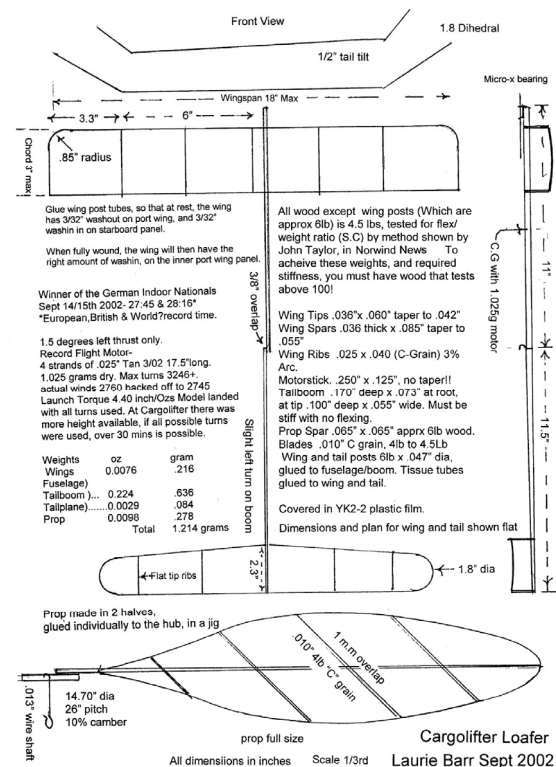


Photo courtesy of Maidenhead Advertiser

Laurie Barr

pleasure! Its like the best birthday you ever had, your wedding night, and Christmas all rolled into one!

The how to do the testing on what really is good wood, can be found in the following paper by Bernard Hunt.

Assuming you have built a sound airframe, and your weights and rubber are O.K, the way you set up the rigging it all important.

When an EZB is flown on a lot of power, the motor stick will be both twisting and bending, the effect of which has changed your downthrust, and will also have added a lot of wing warp you do not want! The wing will have masses of positive incidence on the starboard wing, and a similar excess of negative incidence on the starboard wing. In this condition, the model will “barrel roll”, and the extra downthrust, caused by

the downward bowed stick, will pull the model into the ground!

Normally, built in left thrust will mean the rear end of the motor shaft will be protruding outside the starboard side of the motor stick, causing it to bow and point the prop thrustline to the right instead of left, just when you need left turn on full power!

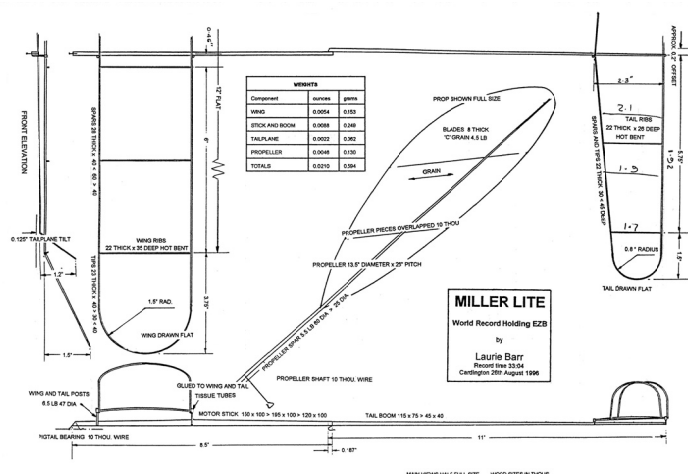
The cure for this, is to bend the rear motor hook sideways toward the port side, so that now you have a situation where the centre of the rubber motor runs diagonally across the length of the motor stick, somewhere near the mid point of the stick. If on full turns your model does not climb in a left spiral, but wanders off to the right, increase the amount of rear hook offset, until normal service is resumed! You can adjust the rear hook with 2 pairs of pliers. Use one pair with a fine point holding the upright part of the rear hook next to the underside of the motor stick, and the other across the lower part of the hook, and you can bend and vary the amount of sideways slant to suit each individual model's needs.

Nowadays, I never use any downthrust, apart from that happening from the bend in the motor stick on full power. Sometimes if the stick bends too much under load, a little upthrust can be "tweaked" into the thrust line at the front nose bearing. A way of increasing the downthrust on full power, is to GRADUALLY sand the top of the motor stick (In front of the front wing post), and test fly between "sandings" until the model does not stall, but climbs away well.

Control of the wing warps is equally crucial to understand and control. I set my models up so that at rest, the wing has either the smallest fraction of wash in on the port inner wing panel; or they are completely flat (Best option if you are not sure what to do)

The effect of all this is that under full power, the twist on the motor stick will then provide the correct amount of washin/out required for a fast and true climb out, without fluttering around wasting energy. The rubber power induced bow, will not have cancelled out the normal amount of left thrust built into the stick, and by these means, you will have optimized the most efficient use of all the power available.

There is one condition that applies when you have wound the rubber motor to its extreme limit, and do not back off any turns. It will probably lose its normal amount of left turns and fly nose up, fly straight ahead or to the right in a deep stall, not able to recover. A model that would otherwise climb fast and true up till now, will require one little "extra" trick! When you come to launch the model, holding the motor stick at each end, twist the stick hard, so that the wings will have a lot of washout on the port wing. Hold this twist for up to 15 seconds, and keeping the wings level to the floor, hold the nose slightly up, and release the prop and give a slight push to get up to flying speed immediately. The model should now climb away smoothly, and this temporary "opposite" warp will un-twist itself after a few seconds, and, the previous good cruising trim



will have re-established itself and it will have allowed you to use every last turn, and the normal desired wing warps will have reestablished themselves.

I am thankful that I got the use of the superb Cargolifter Germany, (before it got converted into a holiday camp "greenhouse"!). This site was Nirvana, just about the greatest height/length/ width, of any indoor flying site, anywhere in the world.

Using my F1L- EZB "Cargolifter Loafer" design (See drawings) in September 2002, I flew a world record flight of 28 minutes 16 seconds. The roof is 100 metres high, way above most hanger roof heights. I used all of the above trim techniques, and it enabled me to apply full turns without any loss of climb, and I estimate it got to within 20 metres of the roof at the end of a fast climb.

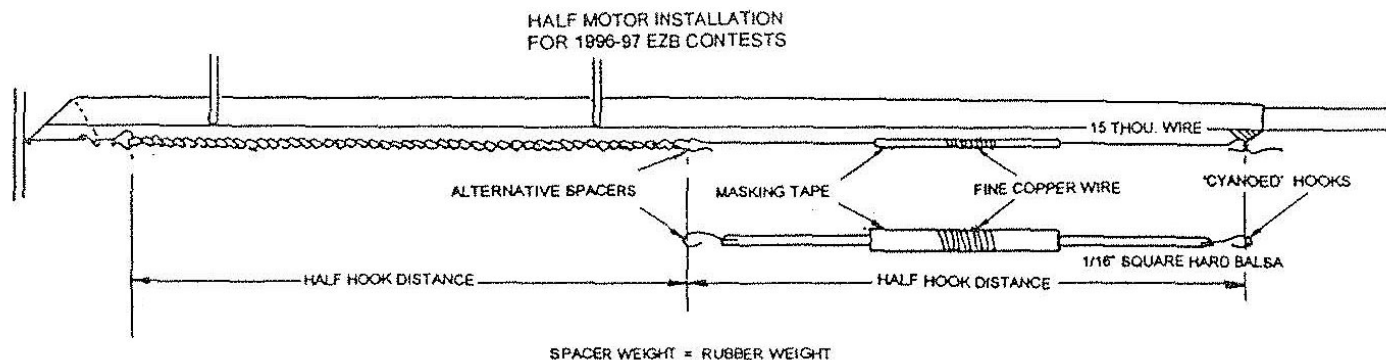
The "Miller Lite" EZB complies with the American EZB rules, where there is no minimum weight. This means models of half the weight (at .6 grams) and strength of the F1L models which must weigh at least 1.2 grams without rubber. Perfect trim adjustment is even more essential for this USA, EZB version.

Notable EZB achievements have been

- USA Indoor Champion & hall record, 22 minutes, 07 seconds. May 1991, United States Indoor Championships Johnson City, Tennessee.
- World Record USA rules EZB-(Miller Lite) 33 minutes:04 seconds Cardington 1996
- Winner of inaugural "Wally Miller" Internat, Kibbe Dome Moscow, Idaho, USA August 1996. 28 minutes:19 seconds + 29.00 minutes.
- World Record F1L (Cargolifter Loafer) 28min-utes:16 seconds Cargolifter hanger, Germany Champion, September 2002
- Multiple EZB/F1L British National Championships 1972 onwards.

PARTIAL MOTOR TEST FLYING

(Since testing with partial motors can be a very important part of flying FIL, the following is reprinted from an earlier issue of INAV, and originally was published in Norwind News by John Taylor)

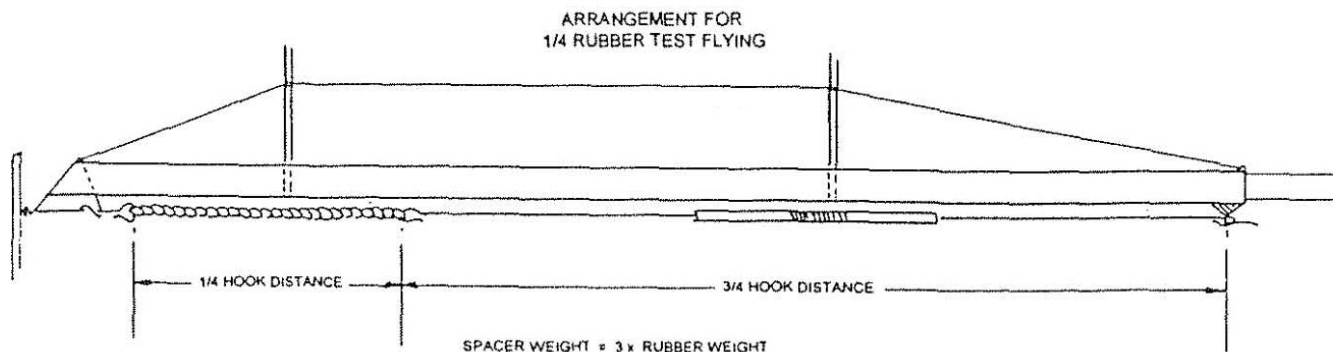


"Partial Motor" test flying is a well established technique which aims at speeding up and simplifying the test of indoor models. It allow you to test and trim a plane in far less time. Partial motors allow you fly your plane in a low ceiling site while trimming it for a high ceiling contest. At a high ceiling site it is useful to check trim, determine climb altitude, and test rubber while getting ready for a full motor flight.

The technique is illustrated above for half motor flying. The normal motor is replaced by a half length, half weight motor together with a ballasted spacer which is equal in weight to the half motor and has a length equal to half the distance between the hooks. However, it may be desirable to change the proportions of rubber weight to spacer weight in order to limit the duration still further. For instance with a F1D model with a maximum duration in excess of 40 minutes one may choose to use a 1/4 motor and a 3/4 ballasted spacer as shown below. In this arrangement the spacer takes up 75% of the distance between the hooks and weighs 75% of the total weight of the spacer and the motor.

In theory these proportions can be anything you choose but in practice they would be matched to the performance of the model under test. In a situation with no ceiling limitations, (such as Cardington), the set-up shown below would produce a duration of 25% of that provided by the corresponding full motor without a ballasted spacer. However every phase of the flight, (climb, cruise and descent), would be faithfully reproduced. This means that the reaction of the model to full torque and the ability to sustain flight on the last few turns can be assessed without waiting an unnecessarily long time before the next trimming adjustment can be made.

The figure shows two methods of spacer construction. The first is just a simple length of wire with a hook at each end and the second is a length of hard balsa with a hook "cyanoed" to each end. In either case the centre is wrapped with masking tape to bring the spacer up to the required weight. Your Editor has found that the simplest method to achieve the correct weight is to wrap the tape until the spacer is a few milligrams light and then adjust the final weight by wrapping fine copper wire around the centre of the tape. It is important to ensure that the C of G of the spacer is at it's geometric centre otherwise the C of G of the whole model will be affected.



F1L PROPS

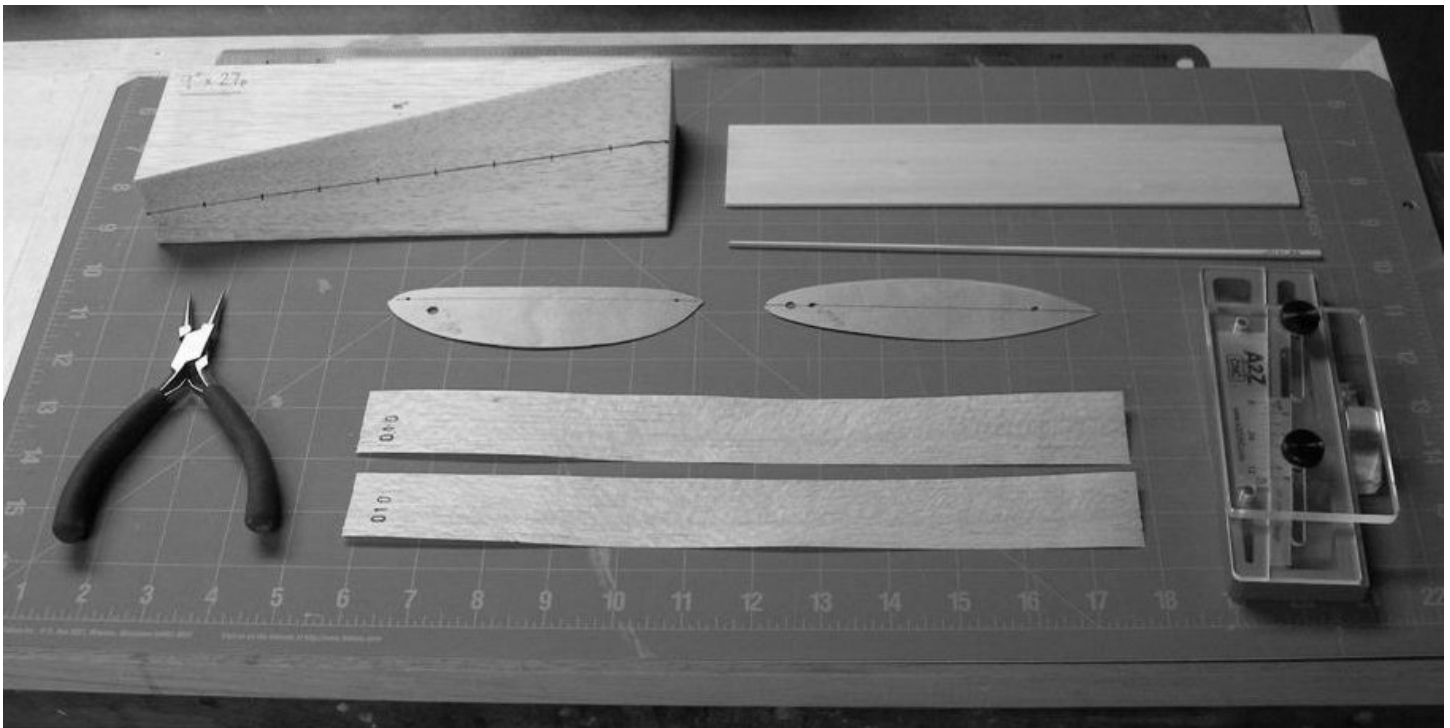
Jeff Hood

F1L and EZB props are not generally considered easy to build. The wood sizes used are very small, and keeping to close weight tolerances is very important, especially for EZB. My first few attempts were fairly miserable, to say the least. In fact, one comment that stuck with me when trying to figure out why my times were not what I thought they should be was "Well, your plane looks great... but the prop... that's another story..." So I gathered up as much information as I could (the INAV CD was a great resource here...) and over last winter started making quite a few props. They did keep on getting better and better, and sure enough, times started to improve. The following is my attempt at a compilation of what I have learned that works for me, and hopefully with the pictures might help others in the quest for better times.

F1L props generally seem to be in the 200mg to 250mg range. I have been curious about the performance relationship between a lighter/heavier prop, given the fixed total weight of the class of 1.2g, as it seems to me that a lighter prop would allow a more efficient use of the energy of the rubber, as long as the prop is sufficiently strong. But for the purposes of this article, we will be shooting for the target of 250mg. Weights of the components for the prop would break down as follows: (target weights... you might have slight differences...)

- Blades - 165mg
- Spar - 70mg
- Shaft - 15mg

First, you need the right materials and tools for the task at hand:



- Round nose pliers for bending the prop shaft. I have found over time that buying cheap brands just isn't worth it. I finally got a pair of strong and accurate pliers that makes the process much easier.
- Prop forming block for the pitch desired. I generally don't form prop blades on a cylinder, but know that some do. It doesn't take too long to make a decent prop block, and many different methods have been described over the years. I have recently been using the Jones-style block, described in a recent INAV. It saves a bit on the size of the block required, and the glued-up sections help a bit when carving it down. Since I have access to a bandsaw, I do a lot of the rough cutting on the bandsaw. (There is a how-to for this method on the www.indoornews.com website in the forum...) I also have quite a few prop blocks built up with the method in the Hobby Shopper article from INAV. In that process, you build the "box" with 1/4" sheet to the proper dimensions, and fill with blue foam. (available from most building supply stores) Works well, is quicker than carving a block, and is very inexpensive. But more important than the *type* of block is to have an accurately constructed pitch block. I also make the face of the block flat, and use a camber form to get camber in the blades. (more on that later...) Additionally, you will need some material to bind the blade sandwich to the form. I have found that cotton binding material from the local

craft store works very well. It is the right width, and is plenty strong to pull tight, as well as working well for oven drying if you decide to go that route.

- Something to strip the spars with. In the photo, and for this article, I used the Jones-style stripper from FID.biz. It is an excellent device, and makes cutting double-tapered spars a breeze. You can use any method, once again the primary emphasis being on accuracy.
- Wood for the spar. I generally use 5.5# -> 6# 3/32" sheet for F1L spars. You can usually find good sheets locally, if you don't mind sorting through sheets. In a few trips to local hobby shops, and with a bit of searching, I probably have a lifetime supply of spar stock.
- Wood for the blades. This should be c-grain, with the thickness around .010 in the 4# -> 4.5# density range. I have found that .010 works well for F1L blades. The blades keep their camber and twist well, and still allow keeping the prop to the weight target of 250mg. You can either sand down sheets to thickness, (once again, explanations in the Hobby Shopper article are applicable here...) or order sheets from a supplier.
- Templates for the blades. I make my blade outline templates from 1/64" or 1/32" plywood from the local hobby shop. Others use aluminum flashing, brass shim stock, or similar materials, but I have found that thin plywood is inexpensive, easy to cut with scissors to the rough outline, and plenty durable enough if you are careful when cutting out the blades. In the picture, there are two templates, a symmetrical one, and an outline for a prop with more flair. For this article, I will be using the symmetrical outline, which actually is a slightly enlarged version of the Hobby Shopper outline.

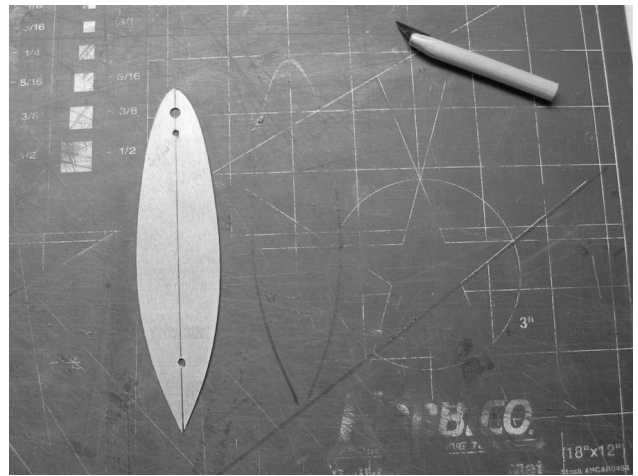


FIG. 2

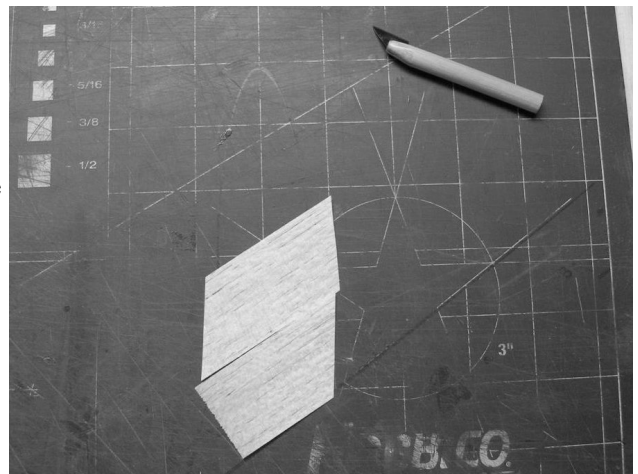


FIG. 3

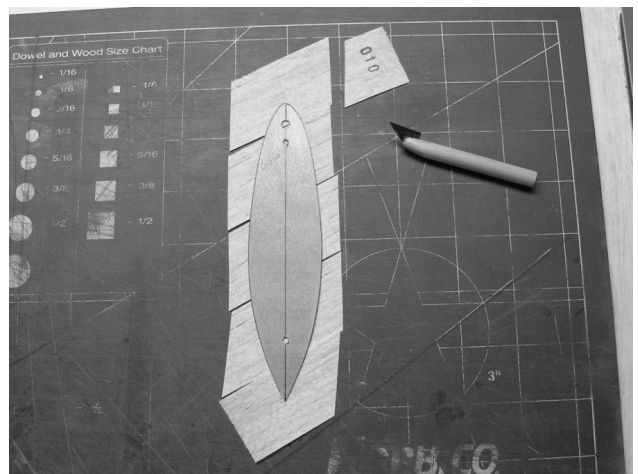


FIG. 4

These, and the other basic tools and supplies (razor blades, music wire, glue, etc...) should get us ready to start the building process. A few other jigs will be needed, namely a deflection gauge if you are going to test your spars for deflection, (which is almost mandatory...) and a pitch gauge to set the pitch of the blades. The Hobby Shopper article has an excellent description of the deflection gauge, and there are many descriptions of pitch gauges available. For the pitch gauge, you can also make a fixed jig as per the Hobby Shopper article, which is very simple and well described.

PROP BLADES

I glue up and form the blades first, since they have to be set on the block and dry, and construction on the rest of the propeller can be done while waiting. My blades are built up, as I have found that the blades are stronger and hold shape better using this method, rather than using a single sheet. As shown in [Fig. 2] and [Fig. 3], I use an old cutting mat, and trace the outline of the blades onto the mat with a marker, along with diagonal lines which I use for laying out the blade stock when cutting. You can also see in the pictures also the blade holder that I use. Simply a piece of dowel with a broken razor blade CyA'ed in. Nothing special, but the round handle does make it easier to turn the blade while cutting out the blades with the templates later in the process. I then layout the sheet to the angle, and cut sections that give a bit of room on either side of the outline. This allows me to get the blades as close as possible to being uniform, and helps not to waste wood by making the blank too small and finding out later. [Fig. 4] shows one blade's sections laid out and checked with the template before gluing up.

Next, you will need to glue up the sections. I use thinned Ambroid, with a few drops of plasticizer in the bottle to help reduce any shrinkage at the joints. Duco or similar cement works well also. There are multiple methods you can use to join the sections. Some prefer to put the glue on the sections, let it dry, and then assemble by aligning the sections and activating the glue with acetone through the wood, and letting it dry. I generally just put a very thin line of glue on the edge of the section, place the next section on right away, let it dry for a 15 seconds or so, and then proceed to the next section. [Fig. 5] If you are having trouble getting the sections together before the glue sets, you might want to try the acetone method. The

important part of this process is to use the smallest amount of glue that you need to do the job, and to keep the overlap of the joint consistent on all sections. I use an overlap on F1L blades of around .020 or so, which seems to produce a good strong joint. (at least I haven't had one fail yet at the section joint...) [Fig. 6] shows the two blanks, with the template. In that picture, one of the blanks has an extra section, which wasn't needed for the blade template that I used. (and which introduced a mistake, which I'll get to later...)

After gluing up the blanks, put them aside to dry and cure for a bit. I don't worry about pressing them flat, as they are going to be wet and formed on a block later anyway. While the blanks are drying, I usually start working on the spar. But we are going to assume the blanks are now dry, and continue on the blades...

A few notes on cutting out the blades... On the plywood templates that I use, I coat the edges with CyA, after cutting them out and sanding to the outline. Then I let the CyA dry thoroughly, and lightly sand to get rid of the roughness. This makes them much more durable, and less likely to nick with the razor blade.

Additionally, I always drill two small holes on the center line in the template, which allows putting dots on the blanks before cutting the blades. In the case of the blades shifting when cutting them out, you can use them to reposition the template. And they will be used later on when gluing the blades to the spar for alignment. So the first step is to place the template on the blank, and mark the two centerline holes with a permanent marker. When cutting out the blades, I put the template on the blank, and cut one side in one pass. This is where having a round blade handle helps quite a bit, as you can easily rotate the blade while going around the outline. I use a small piece of cutting mat, about 6x9, which allows you to spin it while still holding the template down to then cut the other side. Holding the blade at a fairly shallow angle also helps in guiding the blade around the template, and you also do not have as many problems with the blade "catching" and tearing the blank. I almost always replace the blade in the holder before cutting blanks as well, as a new blade will eliminate most of the tearing frustrations with thin blade stock. [Fig. 7] shows the blades cut out, and ready for forming. This is where the aforementioned mistake occurred... I -intended- to cut out from the smaller blank first, but forgot and cut from the one with five sections. And placed the template over all five, so one of the blades has 4 joints, and one 3... not good, even though the weight difference was not significant. But the blades would actually have different properties, so I would normally toss them and start over, but I just kept going for this article.

You will now need to make a camber form for the blades, which goes on the prop block. I use a sheet of soft 3/32", and cut and sand the camber form about 1/16" larger outline than the template. Once cut out and sanded, you then should sand in the curve for the form. For a 3/32" thick form, I sand down in a curved manner to about .020" or so at the edges. Also, I taper the form a bit from the root to the tip, so that the tip is also about .020" or so in thickness. This curve will give a nice camber to the blade, in addition to the helical twist from the prop block. Once you make one, you can use them again for props of the same outline.

Now that the blades are cut out, and you have the camber form ready, you should put them in a pan of cool water, and let them soak until you have the next parts ready. Ten minutes or so is long enough for blades of this thickness, and the camber form should be ready after that long also. [Fig. 8] shows a previously bent camber form (you don't have to redo the form after the first time...) and the components for laying the blades on the prop block. I use a thin (1/32" or so...) cut sheet of blue foam for the padding, since it bends very easily and provides adequate protection from the binding, and silkspan for the material between every piece of the sandwich. I have used tissue in the past, but silkspan has better wet strength which helps quite a bit, and actually seems to separate better from the blades once dry. I have found that a rotary cutting knife is very handy to have around, and makes cutting out the curves very easy. And the silkspan is reusable over and over, which saves time. [Fig. 9] shows the parts cut

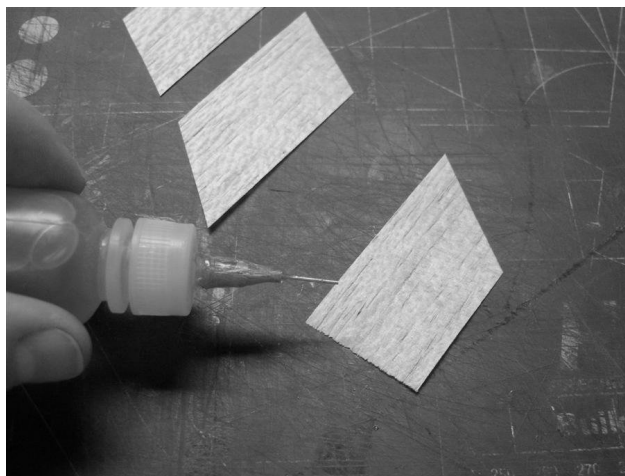


FIG. 5

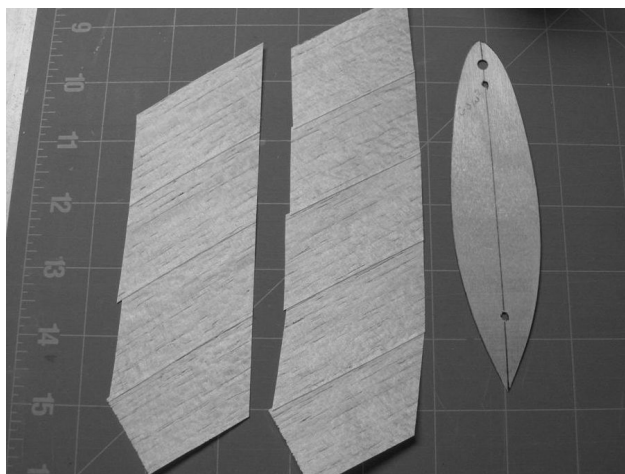


FIG. 6

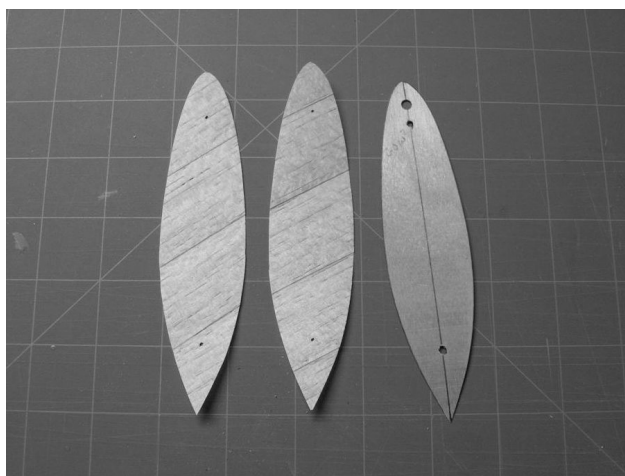


FIG. 7

out, which are all cut out 1/8" or so larger than the camber form. One piece of foam for the top, and three pieces of silkspan. The order for the sandwich will be (from the bottom up):

- Camber form
- Silkspan
- Blade
- Silkspan
- Blade
- Silkspan
- Foam padding

Now it is time to take the camber form and blades out of the water, and blot them dry (carefully for the blades...) with a paper towel. Then create the above sandwich out of the parts. I keep a small spray bottle of water handy to mist the silkspan on each piece, which helps to get things nice and flat, as well as making it a bit transparent to allow the lining up of the components. You should also be able to use the centerline dots on the blades to get them perfectly aligned in the sandwich. [Fig. 10] shows the process part of the way through. Just be careful at this point, since the wet blades are very fragile, and can tear easily. If that happens, you will have to let them dry, and repair and then soak again. I have attempted to form them after a tear, and then repair after formed, but it really doesn't work very well. After you have your sandwich ready, you can put it on the prop block in the proper position and bind it tightly to the pitch block. [Fig. 11] shows the final package ready to dry. With the foam padding, you can pull everything tight which makes the forming more accurate. At this point, you can just let it sit for a few days to dry thoroughly, or if you are impatient as I am, you can put in a oven set to 200 deg. for a half an hour or so. (no responsibility assumed for any carelessness, or upsetting a spouse with an unusual usage of a kitchen appliance...) I also let the baked form sit for an hour or two after taking it out to stabilize. Seems to help, but your results may vary...

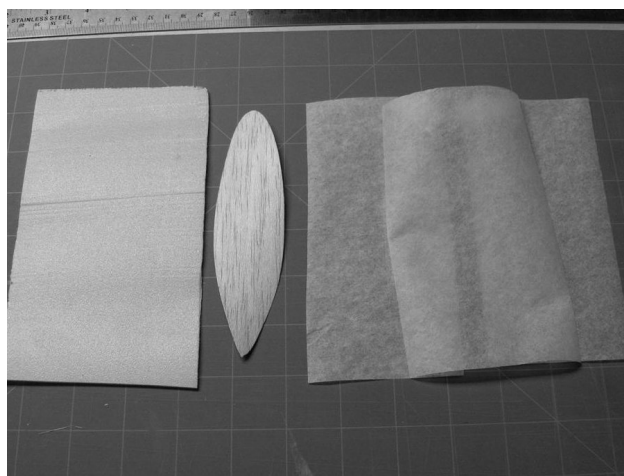


FIG. 8



FIG. 9

SPAR

While things are drying, you can then get started on the spar assembly. First thing to do is to get a nice, stiff, and matched set of spar halves. For this article, I'm going to try to describe cutting double tapered spars with a Jones-style stripper, as descriptions of the method are somewhat hard to find. Other methods that work well are using a Harlan-type stripper, or even using a straightedge and cutting by eye.

First you will need a sheet of spar stock. As previously mentioned, a nice clear-grained sheet of 3/32" 6# stock will work well. I cut a portion of the sheet to about 10" long in preparation for sanding in the taper. In [Fig. 12] you can see the sheet that I used for this spar. Since I already had a sheet tapered for F1D spars that would work, I just used that. We are shooting for a taper over the length of the sheet from .090 down to .025, which should give us a length for a 14" propeller (which would be 7"...) that has the right taper. The goal for the final size of the spar will be .065x.050 in the center to .025x.025 at the tip, which is fairly typical for an F1L spar.



FIG. 10

To sand in the taper, you need a good block to sand with, and the proper grit *and* type sandpaper. I use an aluminum T-bars from Great Planes (usually found in any well-stocked hobby shop...) in two sizes. The 6" one for the rough sanding, and the 11" one for the final sanding and tapering (You could easily make a T-shaped equivalent from 1/4" wood that would work just as well). The stock paper that comes on them is actually very good for sanding tapers in sheets. You want a grit of around 120 or 150 for the rough sanding, and 220 or 320 for the final sanding, but most of all you will need an "open" grit paper, one that will not clog quickly with the balsa dust. I take the spar stock blank, and secure it to a sheet of plate glass (I use 1/4" thick so there is no flexing, but a thinner piece glued to a board of MDF or equivalent would work just as well...) with double-stick

tape, with one edge at the end of the glass. Next, I use the shorter block, starting from the thin end (which will be the end at the edge of the glass...) and start working carefully *across* the grain at this point. This will remove stock aggressively, so go careful and slowly. You are roughing the taper out at this point, and I take a few strokes, then move to the end, take a few more, move up the sheet, take a few, then repeat... moving up the sheet further each time. Unclog the paper often by brushing it clear of dust. This has the result of taking more off the lower end and building the taper. When the thin end gets down to about .035 or so, it is time to switch from cross grain sanding to sanding along the length. This is where having an 11" block makes a big difference keeping things even on the taper. It should only take a short time to get the full taper blended in, and check carefully along the way to make sure that you are not taking too much off. One of the reasons that I start with a longer piece than I will actually need is that if you *do* go too far, you should still be able to get a piece out of the sheet that still has the proper dimensions. Once the sheet is to thickness and tapered, carefully remove from the glass and check for consistency of thickness and taper. Once you are finished, we are now ready to cut the other taper.

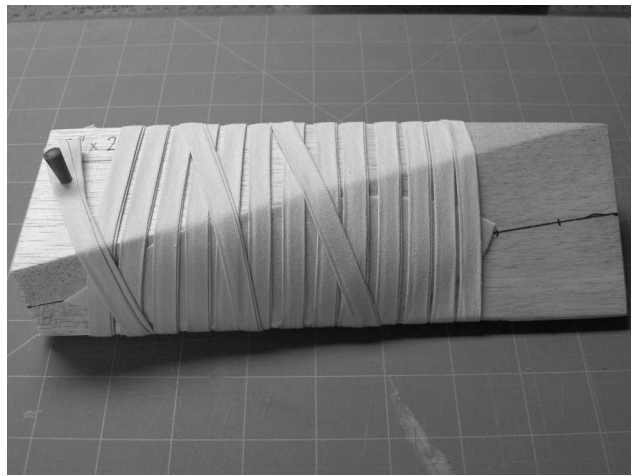


FIG. 11

To do this with a Jones-style stripper, you will have to make a taper guide for the taper that you want. I make mine out of 1/8" or 3/32" basswood or other hardwood, and the basswood is easy to cut with a sharp knife to the taper you want. I have a whole bunch of taper guides at this point, different lengths and tapers over the length of the guide. For this one, I used the same taper that we just sanded into the sheet, from .095 to .025. A point to remember in making them is that they can be longer than the sheet you are cutting the spars from, but shorter than the spar sheet can cause problems... The only thing that really matters is for the length of the section that you will be using, (the spar length) the taper of the guide should be the same as what you want the end result taper to be for the spar. You can see in [Fig. 12] the one that I used for the shots in [Fig. 13] and [Fig. 14], which show the beginning and the end of the cut. By placing the taper guide against the fence, and adjusting the fence so the wide end of the guide is at the beginning, and adjusted to cut to the *narrow* width of the spar, by pushing the whole thing thru you will get a perfect taper over the length of the spar, the resulting spar half going from narrow to wide. Hopefully the pictures will make it easier to understand. I cut two spar halves, then even up the sheet with a straight cut, so the grain stays consistent for the spars. The final result should be two identical double-tapered spar halves. Find the section that is .065 in width, mark the spot, and make sure that you have a 7.25 length (for a 14" prop). Trim to length, and check for uniformity between the two halves.

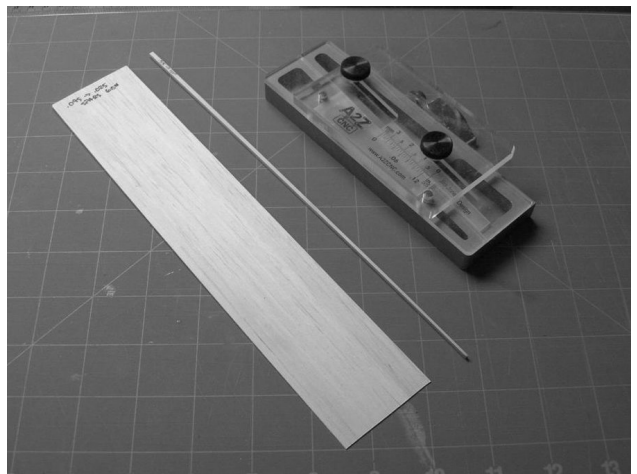


FIG. 12

Next, you will want to check the deflection of the halves with a deflection gauge, and the one in the Hobby Shopper article works very well. I shoot for .25" deflection with a .35g weight hung at the tip. After the deflection testing is done, match up the spars you have cut to get the best match. Even from the same sheet, I sometimes have to cut a half dozen to get two that match up. You also should weigh the two halves and make sure that they are close in weight. After getting two matches, cut a scarf joint in the middle, and join the halves. I take the two halves, overlap them 1/4" in the center, and cut the diagonal scarf with a razor blade. Then coat the ends lightly with glue, let dry, the double glue the halves together. I use a steel ruler, pin it in place on my board, and push the joined spar against it to hold perfectly straight until dry. One thing that I do on F1L spars, to make them a bit more durable, is to cut a 1" piece of tissue, and reinforce the center over the joint. Just one wrap will do. The weight gain is negligible. Now trim to the final length of the full spar. Mark the center point, and make a hole for the prop shaft with a sharpened piece of .010 music wire. Bend a prop shaft from .010 wire using your favorite hook (I use S-hooks most of the time) and mount the shaft in the spar, making sure that you have clearance for the type of bearing you will be using. I use medium or thick CyA to hold the shaft in place, and a very thin coat on the bent portion to lock it in place. Make sure the shaft is at 90 deg. to the spar [Fig. 16], and also make sure that the spar and the hook are not in the same plane, which makes hooking up easier.



FIG. 13

Now to get the blades off the pitch block and on the shaft. Carefully remove the binding on the pitch block, and the foam and camber form should separate easily. Then *carefully* peel off the outside silkspan layers, and you should end up with a blade/silkspan/blade remaining. I use a piece of .015 music wire, and slip it carefully between the blade and silkspan on the top side, and break the adhesion between the blade and paper, separating the blades. Then the other blade can be removed from the remaining paper in the same way. I make EZB blades with .005 sheet this way, and rarely tear a blade. With .010 blades, it is fairly easy to get them separated with no problems. [Fig. 17] shows the blades and the spar ready for everything to be put assembly.

PUTTING EVERYTHING TOGETHER

Now we just have to get the blades on the spar so we can use the prop. A good starting point for a 14" F1L prop would be a pitch of 26 or 28. If you are making a simple pitch gauge with a 45 degree fixed station, for a prop of 26 pitch with a 14" diameter, you would want to fix the station at 4.15" from the shaft point. You also will want to test position the blade on the spar to make sure that the angle station allows the blade to touch on both the top and bottom of the blade. Depending on the thickness of your spar, you may have to relieve the station where the spar will be, so you can accurately set the pitch. For F1L and EZB props, one of the more difficult things in attaching the blades to the spars is keeping everything aligned and held in position during the time that the adhesive will be drying. I use yellow carpenter's glue, thinned about 50% with water to attach the blades to the spar. This seems to work better than thinned Ambroid or Duco, since there is less shrinkage, and therefore less chance for the blades to become distorted. Distortion and/or warping becomes more of a problem with blades under .010 in thickness, but can be a problem with thicker blades also. Also, the thinned yellow glue takes a bit longer to tack up, which makes getting the blades positioned correctly a bit easier and less stressful.

Fix the spar in the pitch gauge, and then apply 4 or 5 tiny drops of glue along the spar line on the blades. I use the two marks that were made during the layout process, and two more between those. You want just enough to hold the blades in position after the glue is dry, as we will apply more glue later on. After putting the glue on the blades, immediately position the blades on the spar, using the dots on the blades as a guide to aligning everything, and with the end of the spar right up to the end of the blade. The blade should touch the angle station both on the top and the bottom [Fig. 18], and now you need to keep everything in alignment until the glue dries. I keep things positioned by using discarded motorstick blanks, leaning them against the blade at angles until the glue is dry. [Fig. 19 and Fig 20]. You can see that I also use a stop at the bottom of the sticks to keep them from sliding out, as the angle becomes less out to the tip. A steel ruler works well, but anything that will not move around should work fine. Let the blade dry completely, and then reset the spar for the other side, and repeat the process. After both blades are attached with a few spots of glue, I recheck the pitch on both blades, and usually check it at a few different distances before fully attaching the blades. If there are any major errors, or things are out of alignment, you can use water to dissolve the yellow glue and re-attach the blades. However, you might have to reform the blades if dissolving the glue causes the blades to deform or flatten. Once satisfied with the pitch and alignment, I then take a small 00 brush and carefully put a very small amount of glue between the blade and spar by gently moving the blade from the spar in approximately .5" increments from the root to the tip. You don't need much glue at all for this part, just enough to make sure that the blade is firmly attached for the full length. Then I hang the prop from the hook on a thread to dry, usually overnight.

At this point, you should have a finished F1L prop. [Fig. 21] I also check for balance at the shaft at this point, by putting the prop into a bearing that I have mounted on a stick, which I clamp in a small vise and test to see if the blade and shaft run true, as well as if the blades are balanced. If

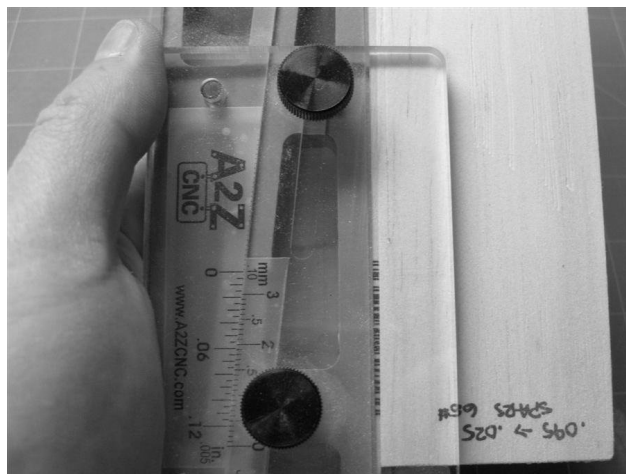


FIG. 14

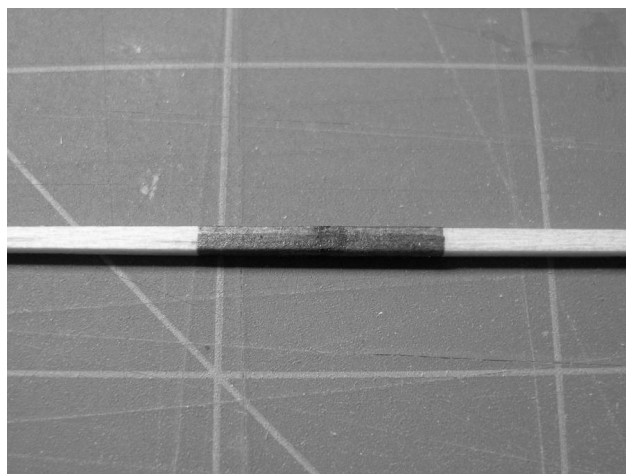


FIG. 15



FIG. 16

the blades are a bit out of balance, it usually does not effect the efficiency of the prop at the low rpm's that it will be running. However, if the prop is significantly out of balance, you might want to try to balance it by adding weight to the light side. I have found that using un-thinned yellow glue drops along the spar can *sometimes* bring an unbalanced prop in balance acceptably. A very small drop at the extreme tip of the light side blade can make a fairly significant difference, so you will have to go slow, or you can make things worse instead of better. I also use a trick that Larry Coslick showed to me this summer to make sure that the pitch is equal on the blades, which is much more important to a true running prop than a slight weight imbalance. To check for equal pitch, put the prop either in a temporary stick and bearing, or on the model's motorstick. Turn the prop so the blades are at 12 o'clock and 6 o'clock when viewed from the front, and then while looking from the front of the prop, turn the motorstick slightly to the right, just until you see the trailing edge of the middle portion of the blade match up with the spar of the blade, looking at the 12 o'clock blade. Then hold that position, and rotate the blades until the one that was on the bottom is now on the top, and check to see if the same spot on the blade is showing the same amount. If it is not, the blades have a pitch difference. You can carefully twist the spar to correct small differences, checking until the blades line up the same. If I make changes this way, I always re-check on the pitch gauge, to record the final pitch of the prop. You can also use this to fix changes that might have set in over time, or come about from humidity or climate changes.

You now should have a true running FIL prop. Light FIL and EZB props are one thing that I have found you get better at making the more that you practice. (like most things...) Hopefully this will help explain some of the more difficult areas, and if you have any questions, feel free to email or post them on one of the indoornews.com forums. (The Hobby Shopper article referenced is available on the INAV website, www.indoornewsandviews.com.)

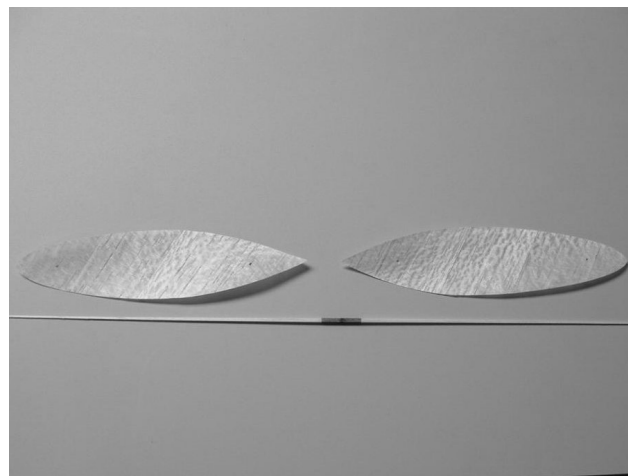


FIG. 17

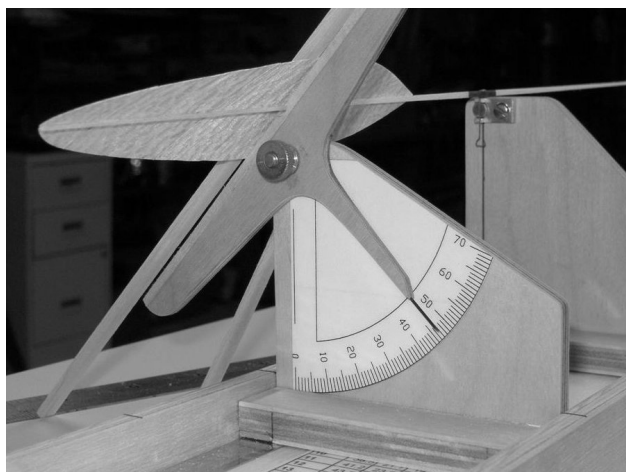


FIG. 18

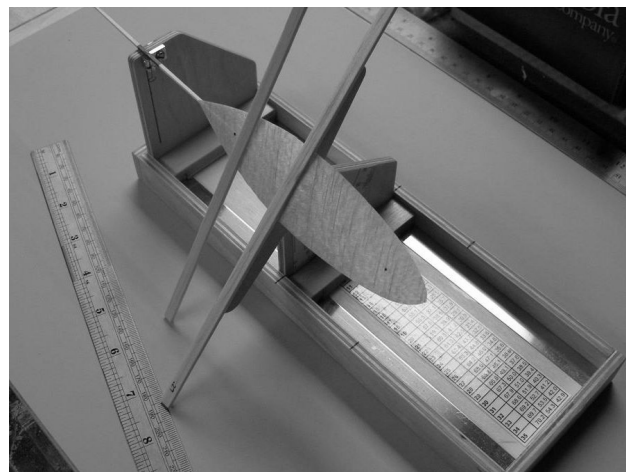


FIG. 19

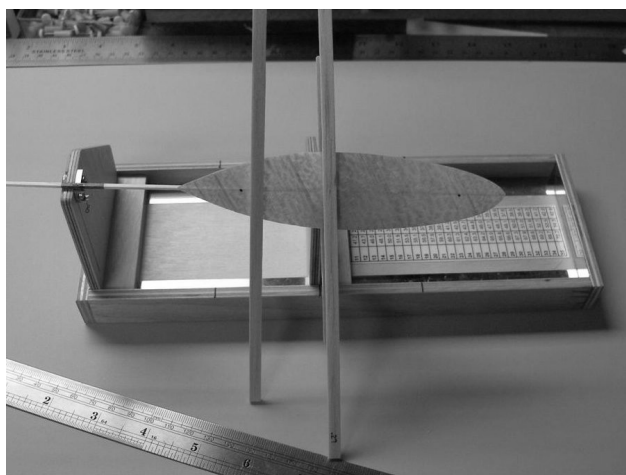


FIG. 20

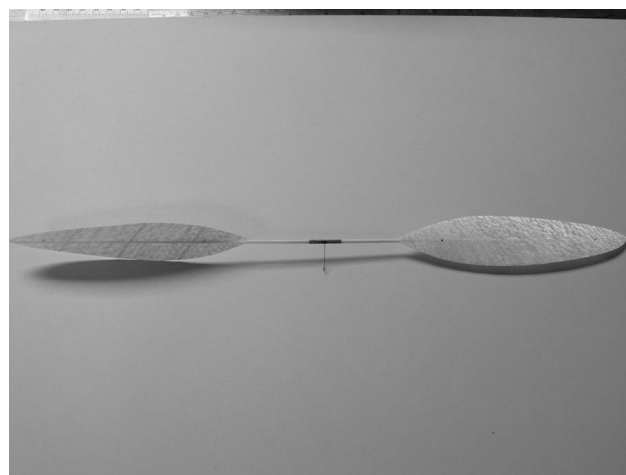
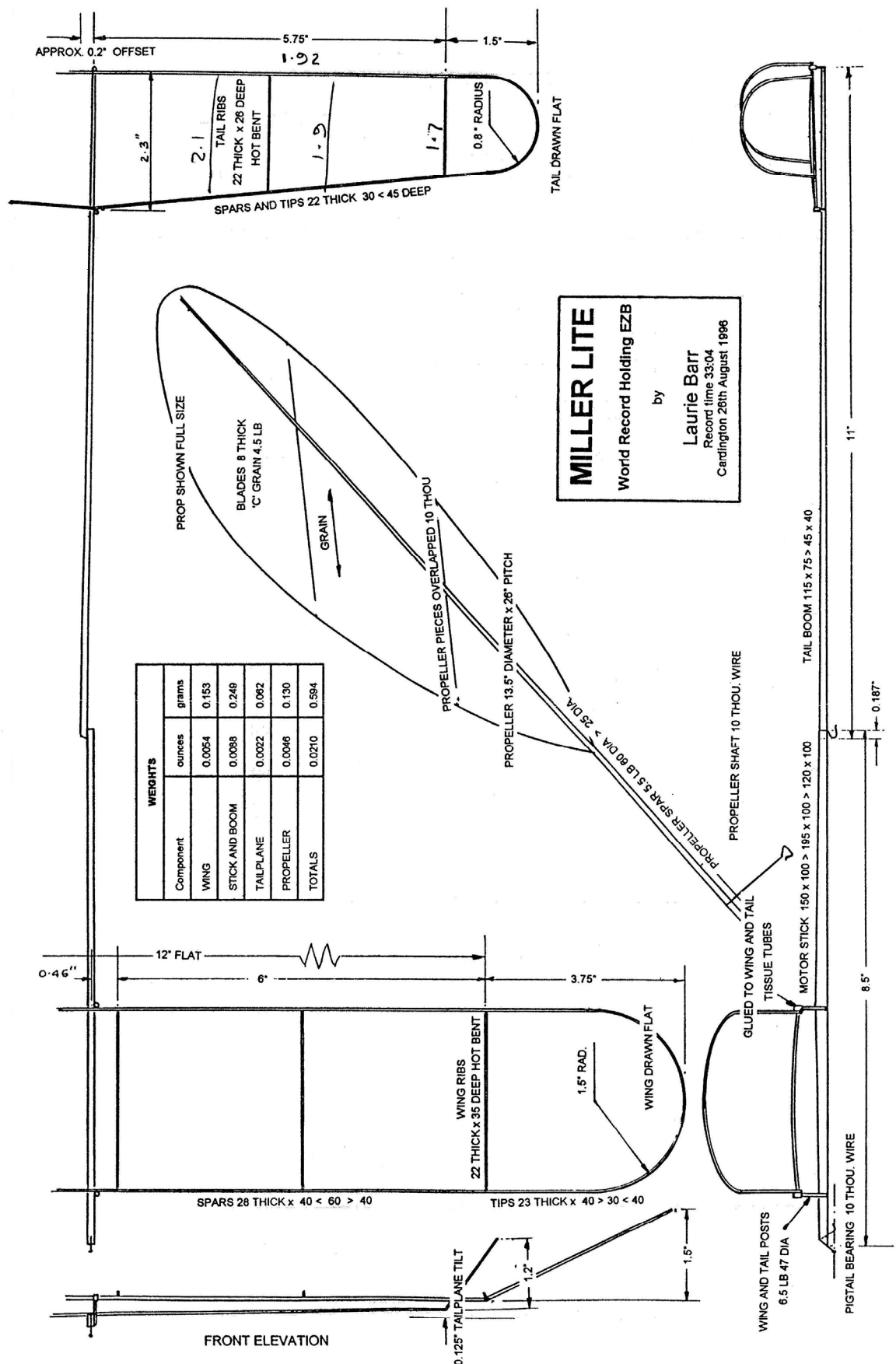


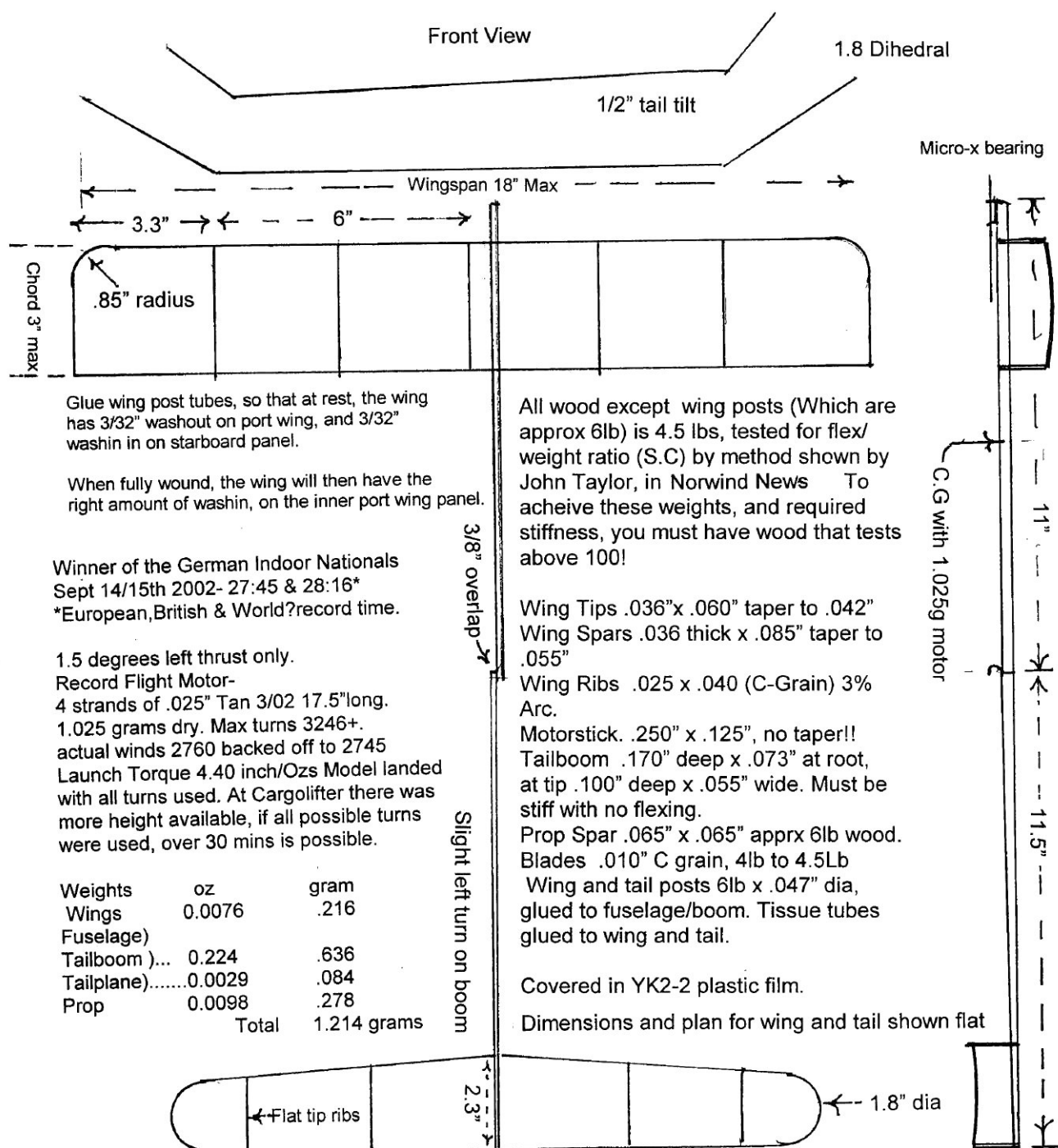
FIG. 21

PROVEN F1L & EZB DESIGNS



MAIN VIEWS HALF FULL SIZE WOOD SIZES IN THOUS.

LAURIE BARR



Glue wing post tubes, so that at rest, the wing has 3/32" washout on port wing, and 3/32" washin in on starboard panel.

When fully wound, the wing will then have the right amount of washin, on the inner port wing panel.

Winner of the German Indoor Nationals
Sept 14/15th 2002- 27:45 & 28:16*
*European, British & World? record time.

1.5 degrees left thrust only.

Record Flight Motor-

4 strands of .025" Tan 3/02 17.5" long.

1.025 grams dry. Max turns 3246+.

actual winds 2760 backed off to 2745

Launch Torque 4.40 inch/Ozs Model landed with all turns used. At Cargolifter there was more height available, if all possible turns were used, over 30 mins is possible.

Weights	oz	gram
Wings	0.0076	.216
Fuselage)		
Tailboom)...	0.224	.636
Tailplane).....	0.0029	.084
Prop	0.0098	.278
Total		1.214 grams

All wood except wing posts (Which are approx 6lb) is 4.5 lbs, tested for flex/weight ratio (S.C) by method shown by John Taylor, in Norwind News To acheive these weights, and required stiffness, you must have wood that tests above 100!

Wing Tips .036"x .060" taper to .042"

Wing Spars .036 thick x .085" taper to .055"

Wing Ribs .025 x .040 (C-Grain) 3% Arc.

Motorstick. .250" x .125", no taper!!

Tailboom .170" deep x .073" at root, at tip .100" deep x .055" wide. Must be stiff with no flexing.

Prop Spar .065" x .065" apprx 6lb wood.

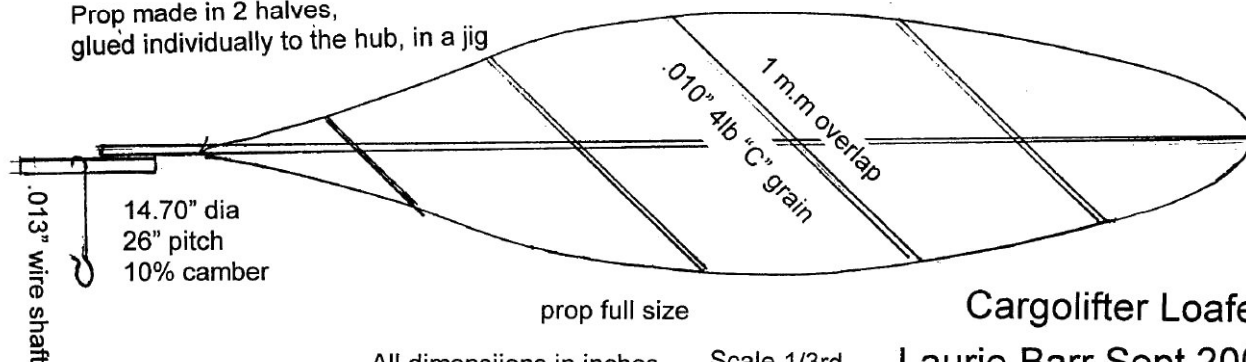
Blades .010" C grain, 4lb to 4.5Lb

Wing and tail posts 6lb x .047" dia, glued to fuselage/boom. Tissue tubes glued to wing and tail.

Covered in YK2-2 plastic film.

Dimensions and plan for wing and tail shown flat

Prop made in 2 halves,
glued individually to the hub, in a jig

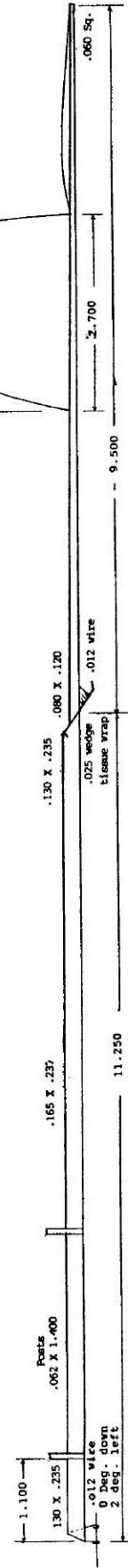
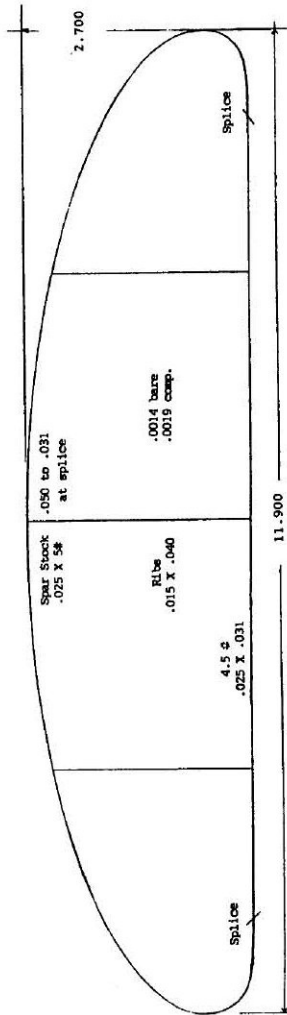
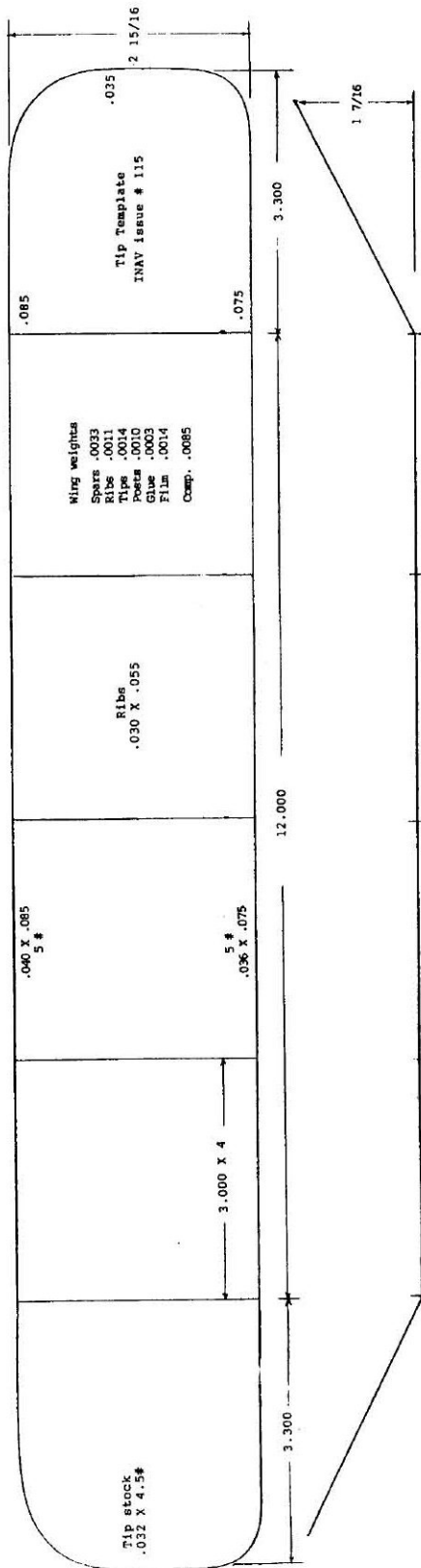


All dimensions in inches

Scale 1/3rd

Cargolifter Loafer
Laurie Barr Sept 2002

WALLY MILLER

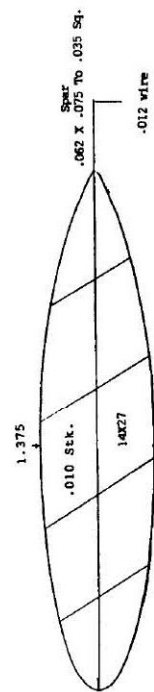


FIL ENZY B	Kibbie Done Winner
2002	Best 22115
2nd 22102	
Wally Miller	

Weights
M/S .0184
Ring .0085
Prop. .0095
Stab. .0019
Rear + .0037
Comp. .0420

Power 7-97
.047 X 17.0
2,980 turns

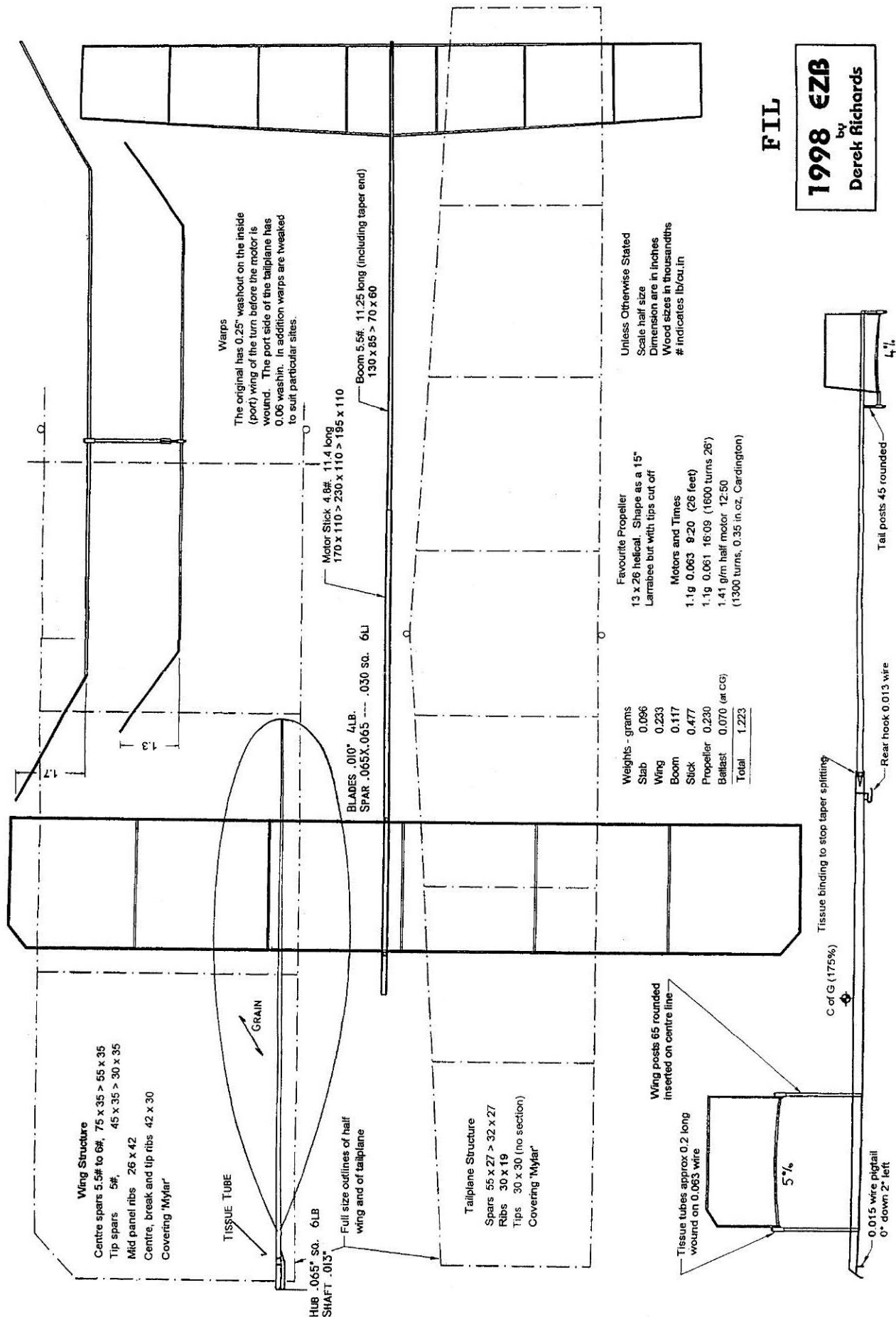
Adj.
3/8 tail tilt, wing
flat at full torque



LARRY CAILLIAU

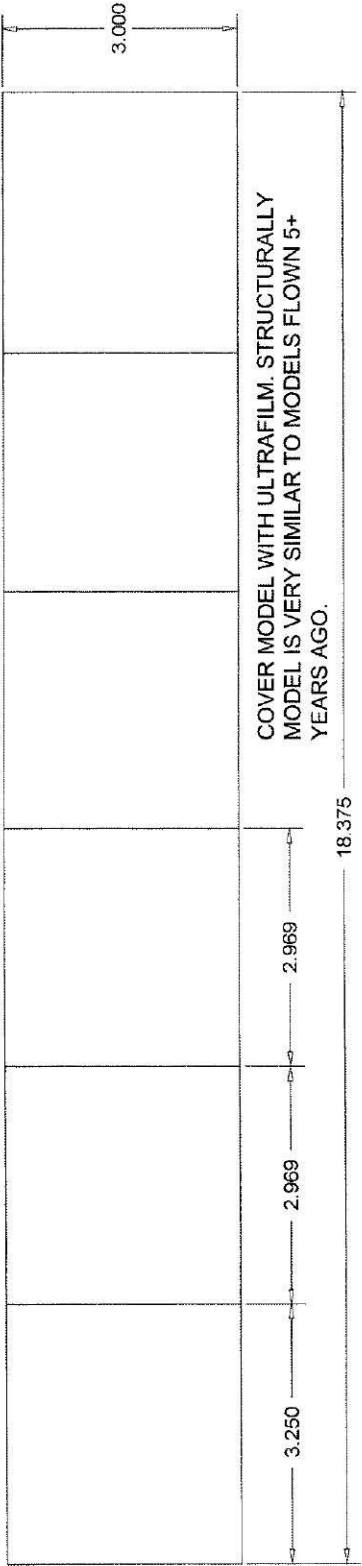
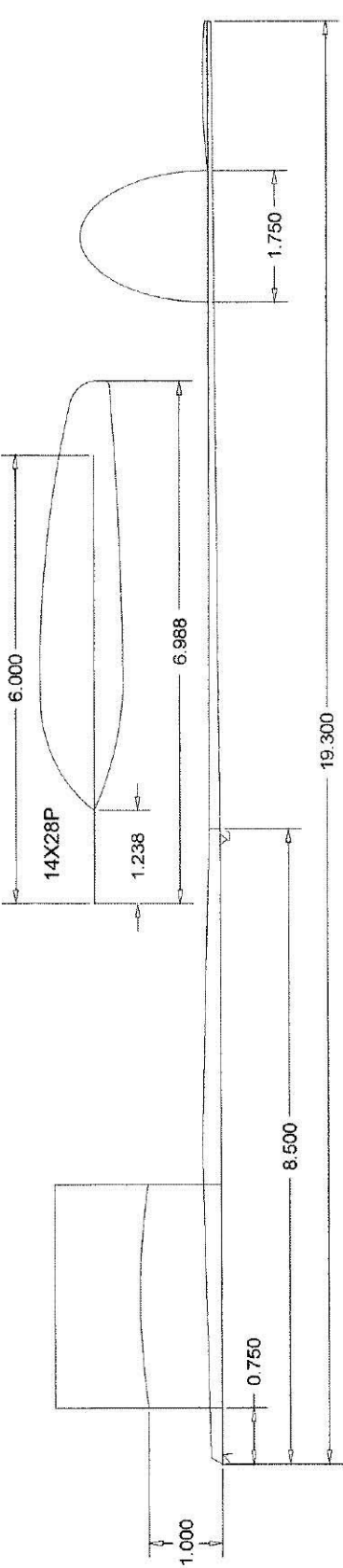


DEREK RICHARDS



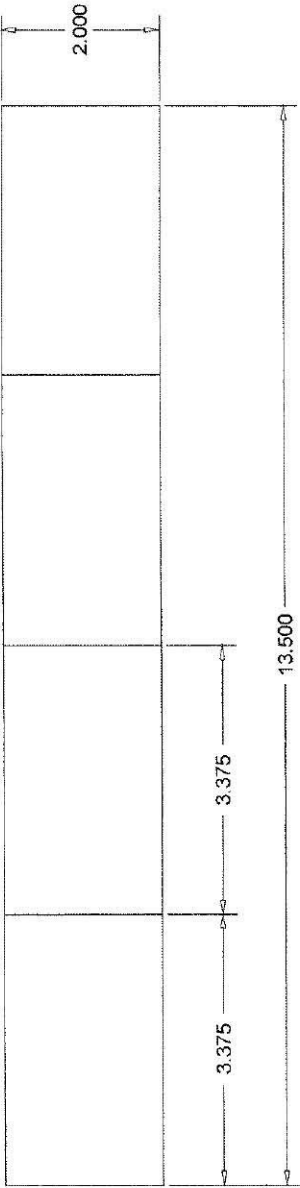
FIL

1998 EZB
 by
Derek Richards

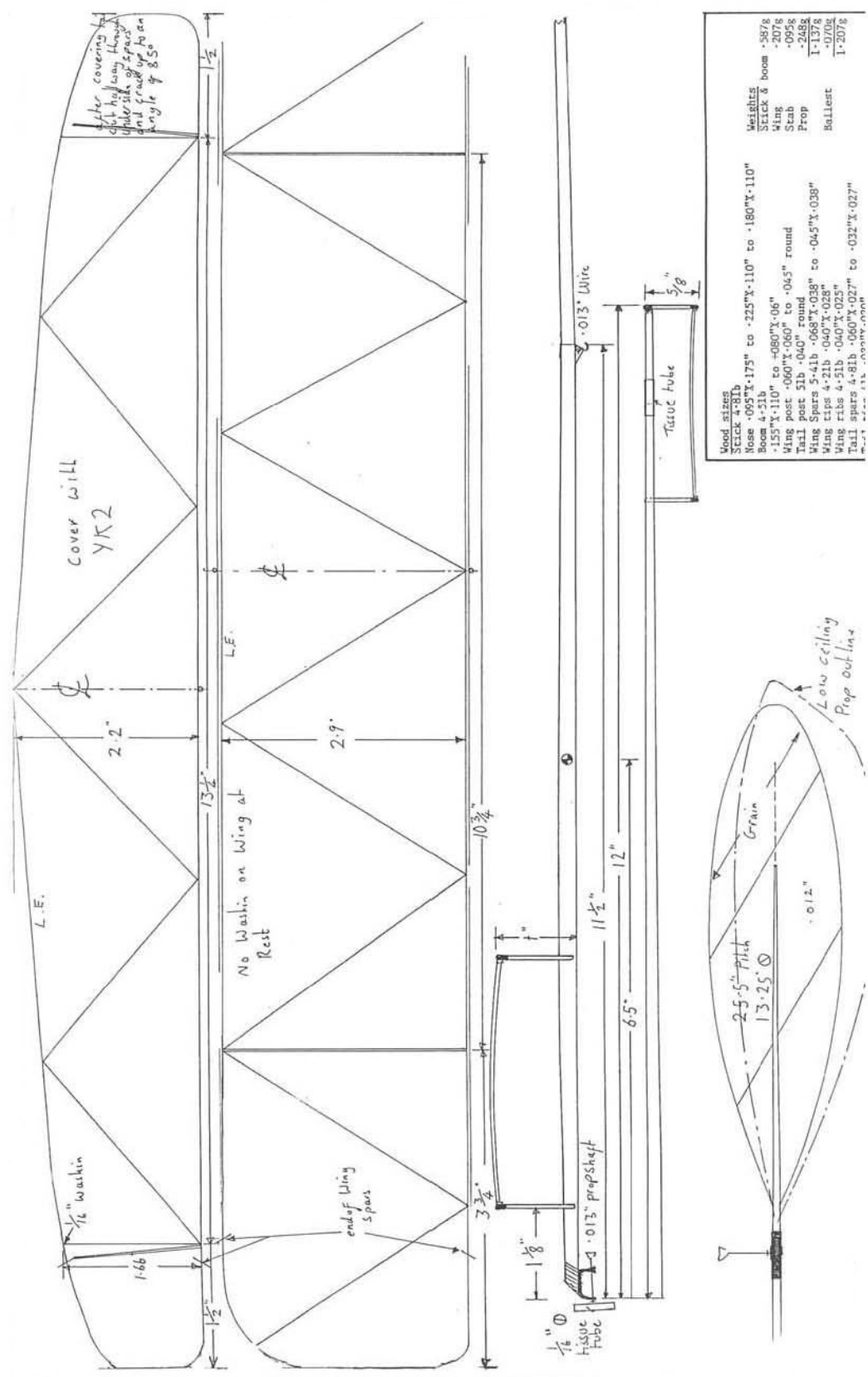


COVER MODEL WITH ULTRAFILM. STRUCTURALLY
MODEL IS VERY SIMILAR TO MODELS FLOWN 5+
YEARS AGO.

WEIGHTS
WING 0.39
PROP 0.22
REST 0.49
BALLAST 0.10
TOTAL 1.20 GRAMS
CAT IV RECORD 21:48

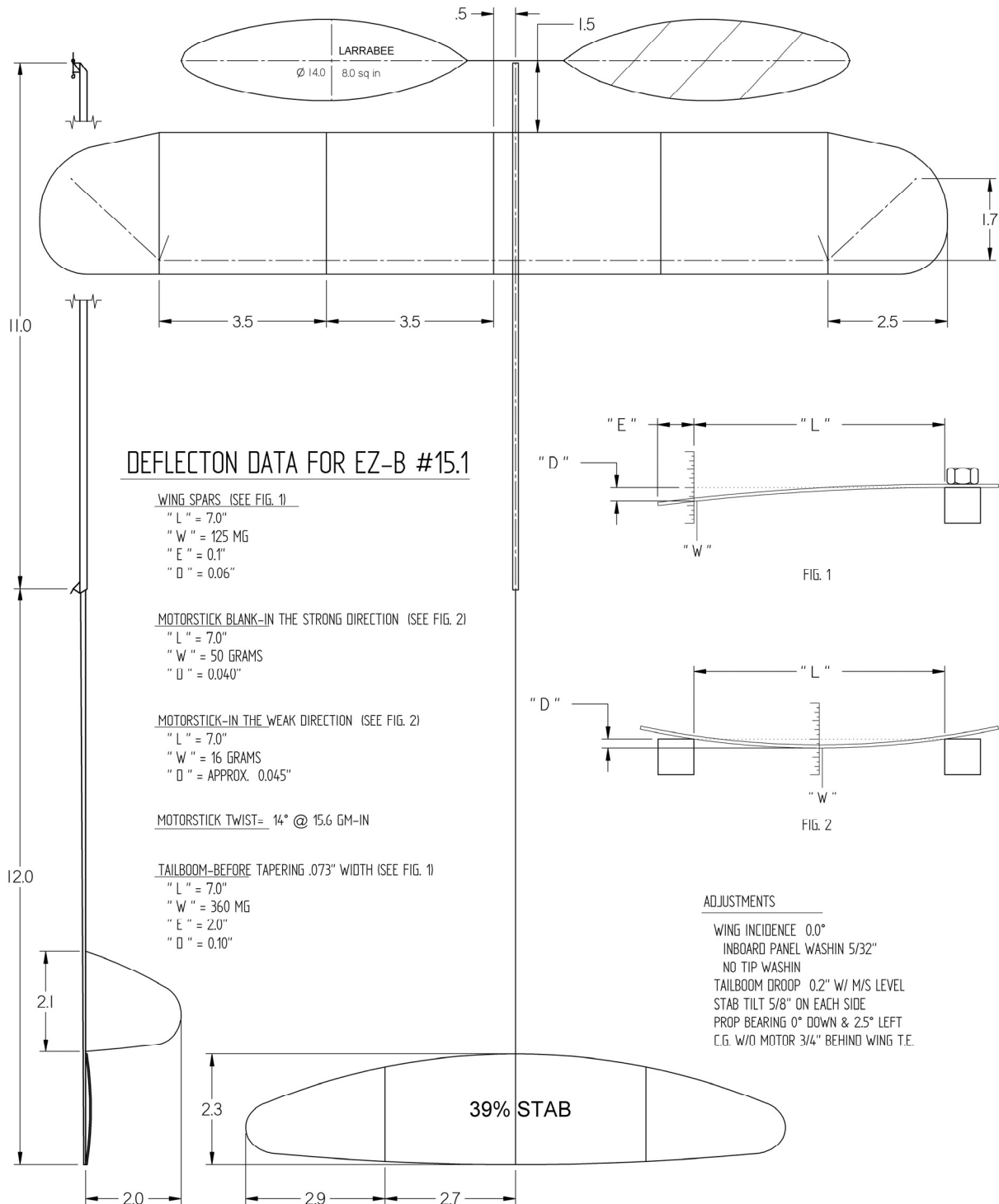


F1L EASY-B MODEL
DESIGN/DWG. V. LINARDIC
15/05/01



[illegible]

MIKE PALRANG



WING

SPARS .035 X .085 - .035 X .045 (11#) 102 MG @ 15" LG
 TIPS .025 X .035 (5.7#) 22 MG @ 10" LG
 RIBS .035 X .062 (5.5#) 6" RADIUS ARC
 POSTS .065 X .065 - .062 X 2.25 LG. (8#)

STAB

SPARS .026 X .044 - .026 X .022 (4.8#) 24 MG @ 16" LG
 RIBS .030 X .030 (5.5#) 7.5" RADIUS ARC

MOTORSTICK

BLANK .120 X .225 X 11 LG. (5#)
 THINNED TO .100 BETWEEN WINGPOSTS
 REDUCED HEIGHT TO .200 BEHIND T.E. WINGPOST
 PROP BEARING & REAR HOOK Ø .011 WIRE W/ .030 GUSSET

TAILBOOM

.073 X .125 - .022 X .060 X 12.0 LG.
 RUDDER .020 X .031 (5#)
 PROP Ø 14 X 28 PITCH
 SPARS .06 X .08 - .03 X .04 X 6.88 LG.
 PROP SHAFT Ø .011 WIRE
 BLADES .007-.010-.010-.007 THK. (4.5#)

WEIGHTS

WING DRY 268 MG
 WING COVERED 312 MG
 WING COMPLETE 347 MG
 STAB DRY 42 MG
 STAB COVERED 59 MG
 MOTORSTICK BLANK 459 MG @ 11.05" LG.
 MOTORSTICK COMPLETE 546 MG
 TAILBOOM BLANK 95 MG
 TAILBOOM W/ RUDDER 103 MG
 PROP SPAR W/ SHAFT 65 MG
 PROP BLADES 88 MG / EA
 PROP COMPLETE 250 MG
 COMPLETE PLANE W/O PROP 912 MG
 COMPLETE PLANE W/ PROP 1162 MG
 BALLAST 50 MG

MOTOR - BEST TEST FLIGHT 4:20 1/5 MOTOR

33" LOOP .052 X .041 TAN II 7-97 235 MG
 WOUND TO .37 OZ.-IN. & BACK-OFF 15 TURNS
 LAUNCH @ .25 OZ.-IN. & 455 TURNS
 LANDED WITH .05 OZ.-IN. & 25 TURNS LEFT
 CLIMBED TO APPROX. 23 FT. HIGH @ 145

MOTOR - BEST FLIGHT KIBBIE DOME-25 JUL '04 20:01

AFTER PRE-WIND & REST 15.5" LOOP .052 X .041
 TAN II 7-97 1.05 GM
 WOUND TO .40 OZ.-IN. & BACK-OFF 60 TURNS
 LAUNCH @ .29 OZ.-IN. & 2100 TURNS
 LANDED WITH .06 OZ.-IN. & 175 TURNS LEFT
 CLIMBED TO APPROX. 130 FT. HIGH @ 8:00

EZ-B #15.1

MIKE PALRANG
 DEC. 2006



REVIEW – JIM BYRNE’S TABLE SAW

Jeff Hood

Ok... I know that this is a slightly different review... not about a tool or product specific to indoor modeling, but from my short experience with it, it is becoming one of the most used tools in my shop. I have a pretty decent amount of tools in my basement shop, having done woodworking for many years before getting back into indoor. After using up most of my Micro-X wood left over from the early 80's, and having a few Hobby Shop-pers under my belt, I got interested in what it would take to cut my own sheets (yeah, I read Tim's article in INAV... but I'm stubborn...) I tried the table saw, band saw, and was ready to get one of the miniature 4" saws from Micro Mark when I stumbled over this gem on the Internet.

Jim Byrne hand crafts the saws, which are virtually all machined, to meticulous tolerances. They are primarily used in the model shipbuilding world, (I found out that we aren't the only ones that use .006 and .008 wood...) and the name apparently is very well known for quality and workmanship. I gave Jim a call, talked about the differences between his and the other mini table saws, and with the price actually lower than some of the other brands, I decided to give it a try.

Jim had the saw to me in a little over a week (he apparently machines parts ahead and assembles the saws pretty much to order) When I opened the box, wow... It is about 30 pounds, crafted beautifully from machined aluminum, with the fence and other parts steel. No cheap plastic toy here... The table is 10" x 12" x 3/8", with two table slots, one on each side of the blade. The miter gauge is unbelievable, as good as any aftermarket model on a full sized saw. It is a machined protractor with pinned locator holes for common angles... and no slop whatsoever in the slots. The fence is just as good, if not better. It is steel, about 1/8" thick x 1" wide, and I got the aluminum extension which makes the fence about 3/4" tall. It is attached to the guides both front and rear with steel pins and screws. There is no slop at all, and the fence rides smoothly on the steel guides. I got the optional micrometer adjustment head for the fence, (my plan was to cut indoor sheets to .001 tolerances, so it seemed like a good idea... and it was...) and it is a high quality micrometer on a removable machined block. The fence locks tightly in place with thumbscrews, both front and back.

Underneath, the saw has massive parts for a tool its size. A 1/2" arbor with a 3/4 horsepower motor, and with machined flanges to keep blades stable, it runs with virtually no vibration. I read in a review that it ran vibration free, which was hard to believe, but when I turned it on, the statement that you could stand a nickel on the table while running and it would stay standing was actually true... Time to cut some wood...

Well, it just got better from there... The carbide blades go thru 3/4" hardwood (I cut a block of 3/4" maple for a test) and plywood with ease, with beautiful smooth cuts. This makes it great for miscellaneous work around the shop, especially for things like jigs and fixtures. It is absolutely perfect for cutting 1/4" plywood and hard balsa. And it is so accurate and smooth, you get cuts that require almost no sanding. I knocked out the parts for a folding pitch gauge in a half hour or so, which would have been much more difficult on the bandsaw, and actually dangerous on a 10" table-saw. And since it just sits under my bench, I can slide it out whenever needed for a bracing jig or whatever... easier than cutting 1/4" sheet with an knife, and much more accurate. It also has a dust port that works great with a shop vac, so dust is under control.

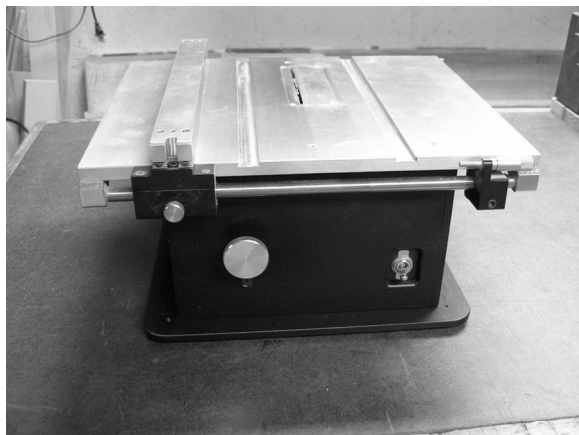
I started with 4" blades, and then after a conversation with Jim, I got a 5" carbide blade and cut thru the table a bit (on his instruction... wouldn't have done it without asking first...) to allow a 4.5" .030 slitting blade to be used. To make a long story short, after some practice, and with a custom Thurston blade with the proper teeth, I am now cutting sheets down to .008 consistently, and using the micrometer as a stop, can cut any size I want pretty much on the first try. With the .001" tolerances that we use, I might end up in a run of sheets with +/- .002" on either side of the target, but it works really well, and it is nice to be able to cut what you want, when you need it. I even made a few taper templates, and now have a life-time supply of tapered spar stock from some very nice sheets from one of the better blocks.

The only bad thing is, like everything of high quality, it isn't cheap. But at around \$400 for the saw and accessories, it really isn't much more than the Micro-Mark, Preac, and other brands out there, and the quality actually makes it a bargain in comparison. So if you are thinking of getting a small saw for small work, need a smaller saw for the times you don't want to haul out the table saw, need the accuracy for precise cuts for jigs and things, or want to cut your own indoor sheets, I would highly recommend giving this tool a try. I wouldn't give it up even if I wasn't having fun cutting my own wood, it is just so handy and useful around the shop (yeah, I even use it for little jobs around the house... not relegated only to modeling...) Five stars, two thumbs up, etc.

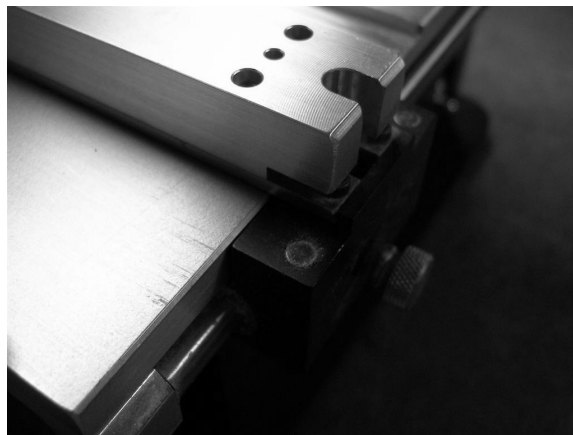
Feel free to give me a call or send an email if you have any questions.

Usage note: This is a real tablesaw. For this or any other "miniature" tool, please use all safety devices, and adhere to safe woodworking practices.

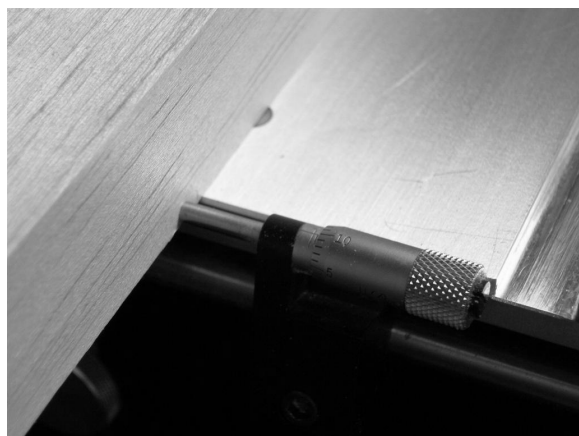
(note: blade guard removed for pictures)



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THE EMPIRE STATE INDOOR CHAMPIONSHIPS: AN ENDANGERED SPECIES

Bob Clemens

Western New York Free Flight Society

The annual business meeting of my club, the Western New York Free Flight Society, will be held on November 18. An important item on the agenda will be whether or not to continue holding our annual indoor contest, the Empire State Indoor Championships. We have co-sponsored this contest, along with the national Flying Aces Club, every year since the inaugural meet back in 1998 (there was no contest in 2005) at the Buffalo Bills fieldhouse in Orchard Park, NY. This site is arguably among the best Category IV venues available for indoor flying anywhere in the country. Its floor area measures 400 x 200 feet and holds a regulation-size football field complete with artificial turf. The arched ceiling peaks at 128 feet. Indirect lighting fixtures running down each side give a soft, almost shadowless light to the floor below.



The first ESIC took place in March of 1998. We had just over 50 fliers sign up that chilly upstate day, contesting 14 events. Some entrants were from as far away as Michigan, Ohio, Maryland, New England, and Virginia. A sizeable group came down from Canada. Most had never seen the cavernous fieldhouse before and were duly impressed as they filed in. Enthusiasm ran high. With a \$20 entry fee, the two clubs broke even on expenses despite the \$1,000 rental fee charged by the Bills organization. Interestingly, a heavy snowstorm struck the upstate area two weekends later that would have forced the contest to be canceled had it been held at that time.

Attendance has steadily declined since that first contest, first into the 40's, then the 20's. The financial shortfall to both sponsoring clubs increased accordingly. At the most recent competition, held on May 21, only 18 contestants showed up. The Western New York Free Flight Society and the Flying Aces Club took severe hits on their treasuries as a result. Even though the entry fee had been increased to \$30, at least 35 open contestants would have been needed to break even. The optimistic inclusion of an after-the-meet RC electric fun fly saw only a handful of fliers show up and failed to stanch the bleeding.

I recently heard from a fellow modeler who thoughtfully passed along the results of an informal survey he'd done among contestants at several eastern area indoor contests earlier this year. He was attempting to seek reasons for the continuing epidemic of no-shows at the Buffalo contest. He reported three. Here they are, with my responses:

1. *Bad impression of the place because the excessive heat generated from the indirect lighting fixture pushed the planes to the girders or formed a difficult to penetrate inversion "ceiling" of warm air.*

This is certainly has been a legitimate criticism from those flying the ultralight events such as Easy B, Penny Plane, etc, although the ceiling seemed to be formed at about 80 feet, still a decent height. But this has caused no significant problems with other events, such as scale and catapult glider. In an attempt to minimize we turned off some of the lights at the 2006 contest which, according to F1D contestant John Kagan, apparently solved the "ceiling" and drift problems. But attendance by those who fly FAC scale events, Bostonian, and catapult glider has suffered as much as the lightweights. Some of the scale guys from out of state tell us that they love the site but a one-day contest isn't worth the trip. We did try a two day contest two years ago but attendance was a disaster.

2. *The nearness to the USIC at Johnson City.*

There's not a lot I can do here. Sandwiching the Buffalo contest into a busy spring schedule that includes Bills mini camps, Mothers Day, and indoor meets at Kent, Ohio and Flint, Michigan, is no easy task, and the building with heat turned off would be very uncomfortable if we tried to hold the contest on most weekends in February, March, or April. Of equal significance is the treacherous nature of late winter weather typical in upstate New York. A snow storm could easily be a factor in getting to and from the site during any of those months. We tried a fall contest once, and it was another attendance flop.

3. *The uncertainty that the event could be canceled in short notice due to the Bills deciding to practice at any moment.*

This one is specious, since only once in all the years we've held the contest at the Bills fieldhouse did they pull a switch on us that required a change of date. But once doesn't make a trend or a continuing threat. This, I believe, is a complaint without merit.

So there we are. We've worked hard to make this contest attractive to indoor fliers. Those who have attended have told us we've succeeded. The site, lights or not, is still one of the best available in the eastern portion of the country. To their credit, the Flying Aces organization has just told us that they will go along with whatever decision the WNYFFS makes at its upcoming business meeting. For now, the future of the Empire State Indoor Championships hangs by a thread. Perhaps, barring a willingness of either sponsoring club to continue to absorb financial losses, its time has come- and gone, a victim of a lethal mix of scheduling, location, and possibly a slowly growing lack of motivation and interest among many competition-minded indoor fliers.

Update - From the Indoor Construction Yahoo Group, Wed Jan 31, 2007

Consider this a brief obituary for the Empire State Indoor Championships.

There will be no meet at the Buffalo Bills fieldhouse this year, or any year in the foreseeable future. The Bills have raised the rental fee to \$1,500 for 2007 and will charge \$3,500 starting in 2008. There will also be an additional charge for security service. Apparently a recent collective bargaining agreement between NFL owners and the players union allows the union to skim a portion of any rental fees charged for a club's facilities, leaving not enough for the football club to meet expenses incurred in these rentals. So up goes the rental fee to compensate. The new fees are simply too high for the Flying Aces Club and the Western New York Free Flight to absorb, especially in light of the low attendance at the contest during the past three years. So, with regrets, it's goodbye.

There is a renovated armory in downtown Rochester with an arched beam ceiling, maximum height 55 ft. Lots of floor area. Reasonable rental charge. We're considering holding a contest there. Whether or not it will take place remains to be seen. Even in the face of the apathy that diminished our efforts at Buffalo, it could be a success.

Bob Clemens



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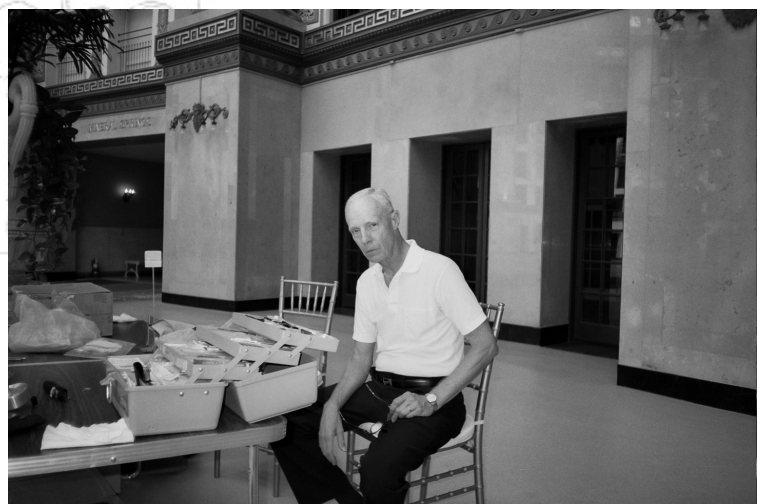
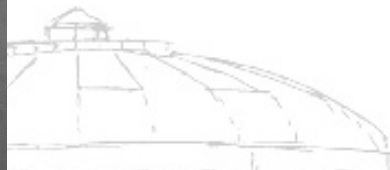
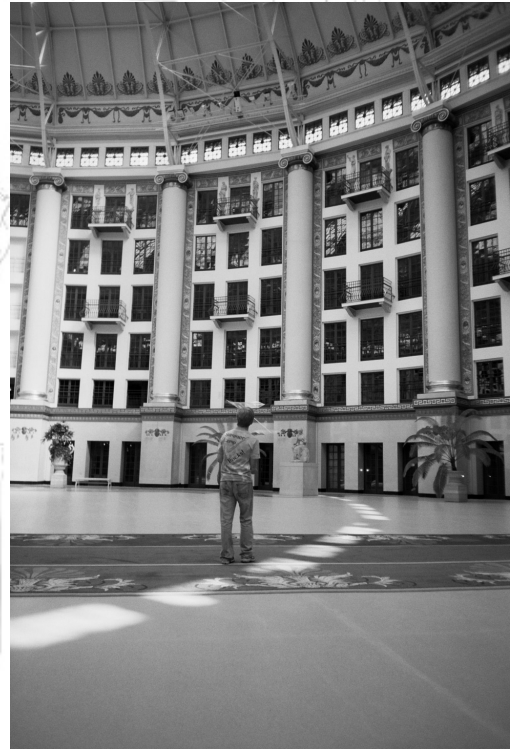
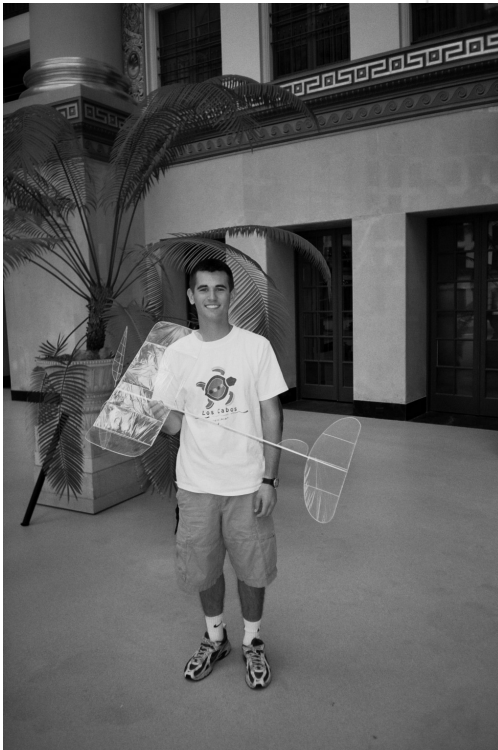
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WEST BADEN, 2006





INDOOR WORLD CHAMPIONSHIPS—2006

Ray Harlan and Tom Sova—Team Managers for Seniors and Juniors

The trip had an ominous start with a call from John Kagan to Ray Harlan; he would arrive on a later flight due to a delay getting out of Cleveland. Everyone else's flights went well and all were able to carry on their model boxes, including Ethan Aaron who was traveling through Heathrow. Apparently, the paranoia of terrorist threats had subsided enough that common sense prevailed to an acceptable degree.

Kagan did arrive on the same flight as Sanborn and Schaefer, from Amsterdam, but his luggage didn't. It seems his bags were checked only to Amsterdam, not to Bucharest. After filling out endless paperwork and being promised that the bags would arrive the next day, John was ready to join the group for the trek to Slanic. Aurel Popa, our perennial aid in navigating Romania, had arranged two large vans to ferry the crowd of 16 US and 2 Canadian members to Slanic. But wait. Where was Vlad Linardic? Fred Tellier expected him earlier in the afternoon. Clearly he had missed his flight and we decided to head north without him. It wouldn't be until late the next night that Fred would learn that Vlad's mother had become ill and he decided to stay back. This left the Canadians without a third team member (Doc Raymond-Jones would arrive on Monday) and with no Team jackets – Vlad had them.

Justin Young and his dad Gerald had gone ahead to Slanic with Aurel. When we arrived, we discovered Justin had already had a serious accident, badly spraining his ankle. Things were not looking great for the US gang. An even worse fate befell Andras Ree of Hungary. He tripped and broke a knee cap. He was taken to the hospital in Ploiest and told he should have an operation. He opted for a cast instead and bravely flew his models.

An opportunity to get some extra flying time was offered and everyone there took advantage of it. All of the Senior US Team had seen the mine before; none of the juniors had. That first trip down the elevator always gets the adrenaline flowing; modelers are anxious to get the first tests in. The air was decent, but many were struggling to find the right rubber. Larry Cailliau couldn't understand why his quarter-motor flights were so short. He had flown here before, as recently as 2002. After a while, he realized he had been flying on Tan Supersport. Larry Coslick had suggested that early trim flights use less than the best rubber to conserve it and Larry had a bag of it, not clearly marked. He finally made some respectable time with the good stuff. Brett Sanborn and Doug Schaefer also had some good times. Of course, John Kagan didn't fly because most of his equipment was in the as yet undelivered bags. The juniors were discovering how tough the venue can be, but at least they were getting models trimmed well. Tom Sova worked with them and made many suggestions to improve performance. We left the mine generally satisfied that we could compete.

Tuesday was the official practice day and we again were eager to get started. Kagan had returned to the airport at midnight to retrieve his bags, which finally had arrived, although on separate flights! He also tried to get a pair of crutches for Andras Ree, to no avail. Justin was still hobbling, but showed some improvement in his sprain. By the end of the day, nearly everyone seemed to be comfortable with their times. No one had ventured a full-motor flight; rather they used quarter- and half-motors. Thankfully, opening ceremonies were kept short and everyone gladly returned to the hotel for dinner.

Wednesday started early, with the first vans to the mine leaving by 8:00. There would be practice until 10:00, when the first round started. However, in a departure from past World Championships in the mine, practice would take place in the area near the lunch hall, not in the main flying area. The drift resulting from the elevator was formidable. The air was crowded and reasonable testing was difficult at best.

The opening horn sounded and contestants lined up to process. Also in a departure from previous practice, the processing equipment had been moved close to the work tables, remote from the flying area. This proved helpful, as drafts were significantly less and models could be weighed easily. Larry Cailliau offered to fly first. He processed and moved to the area under the tee in the flying hall. His launch was excellent, revealing his careful preparation and previous experience in the mine. The model climbed past the catwalk and was well centered. No steering was needed and the model landed with a 35:14. Brett Sanborn followed and posted a 32:49, a good start. Kagan flew last, but had problems getting the model high enough and scored a 24:44.

The junior team felt prepared and all were anxious to get in a first round flight. Justin Young was first up. He was focused and knew what he wanted in the way of turns and torque. He did break three motors before he launched for that first round. Justin landed with a respectable 26:13. Ethan Aaron was up next and proceeded to wind and break six motors before getting one successfully transferred to the model. His model went off smoothly but did not get high enough and managed 21:38. His rubber seemed not to have as much energy as that of other fliers. He was flying on 3/02, not 5/99. Nick Ray was the last to go off but would also contribute to raising team manager Tom Sova's blood pressure. After hooking the o ring to the prop the rubber slipped at the rear hook. Nick managed to hold on to the motor while Sova cut the o ring at the prop. No damage so Nick wound another motor and broke it. Nick finally got off a flight that only climbed to about 160 feet. His model cruised beautifully and did an impressive 27:00 minutes for the high time of the round. Even with all the mishaps, the juniors showed composure and were in first place after a shaky start, leading the Romanians by more than 19 minutes, due mainly to a bad start by Alex Dascalu. Only thirteen

years old, Alex had quickly become a capable interpreter for the US crowd. He kept mumbling about how he could do 30.

After lunch, round 2 began. Again, Cailliau started off. His launch was the same as the first flight, but he got higher, touching the ceiling several times. That helped get the model off-center and into threatening territory over a catwalk. Ray Harlan suggested that he try to get a balloon up on the ceiling and let the model touch it to change the circle position. This is an almost impossible maneuver, but Larry did it perfectly, nudging the model back into the center. By now, the model had come off the ceiling and in a few minutes was in safe descent. He scored a 35:08 to closely match his first flight and put him in first place. Sanborn again flew second and improved with a 33:29. Kagan fired one up to the roof, touching at 5 minutes, but it walked there too much and got over the dreaded catwalk before steering efforts could get it away. The Romanians were quick to send Aurel Morar and their expert miner to retrieve the model. They remove the motor, unwind it and wrap it around the front of the motorstick. The model is launched downward and glides to the floor. This trick would be performed more than once for us during the course of the Championships.

The juniors were having their problems keeping their average up. Justin had a great flight going, only to hit the wall and slide down 40 feet, resulting in a 21:55. Ethan improved about a minute to 22:30, but this wouldn't be enough to help win the Team trophy in the long run. Nick Ray had stall problems and scored only 5:35.

Thursday dawned with mist over the hills, but the sun was peeking through. Mild temperatures and no rain are unusual for this season in Slanic. After breakfast, the trek to the mine began. The practice area had not changed and fliers were getting a bit more desperate. Larry Cailliau took Ethan under his wing. He had been flying only 6 minutes with a quarter motor. Larry tweaked his prop down in pitch a little and gave him a quarter-motor of 5/99. That pushed his time up by more than a minute, but the model deadsticked even higher. The prop was retweaked to higher pitch and the height and time went up significantly. Larry then gave Ethan some more 5/99.

For the third round, Kagan requested to fly first. This time the model looked more promising, but didn't get above the catwalk. John posted a 32:02, improving his two-flight total by more than five minutes. Brett made 33:12, improving his total. Cailliau didn't quite reach the catwalk and clocked 30:30. Meanwhile, Popa, who had done a 35:13 in the second round, did 34:59 in the third, to breath down Larry's neck pretty heavily.

The juniors started to make a match of it. Justin did 31:05, only the third junior to ever get more than 30 in a World Champs (Schaefer and Saks were the others). The ankle seemed to no longer bother him. Ethan moved up to a 27:53 with the good rubber. Nick couldn't get high enough, but made 23:28 to keep the lead for the US.

Halfway through the contest, Cailliau was on top, but the Romanians led in team times by more than 7 minutes. We needed to concentrate on moving our guys up. After lunch, round 4 would begin.

Again Kagan elected to go first. His model moved cleanly upward. This time it didn't hit the ceiling in 5 minutes, but rather closer to 7. There must have been additional heat near the top, because the model started to touch in earnest. Despite trying to steer it, it quickly walked over to the catwalk, hit the wall and settled, dashing hopes of a clean flight. The model was retrieved efficiently, with no damage. Sanborn put up a 34:03 to help. He kept getting better! Cailliau flew a very respectable 33:56, but didn't improve his total. Doug Schaefer finally sorted out his problems and posted 34:09.

Ethan pushed his best time up a minute to 28:52 while Justin did 20:28 and Ray had a zero, failing to get a launch in two tries. In all too short a span, it had come down to the final day. The fliers were still plenty fired up, but the spectators were getting tired of the bone-chilling cold. They couldn't move around much to keep warm. In round 5, Kagan did 31:03 to go with his 32. Brett flew 33:42, upping his total by 13 seconds. Cailliau had a 33:22. The team was slipping, due to Amarattei's 34:20. Doug Schaefer posted a 34:29 to suddenly put him in third place! The juniors kept holding their own, though, with Aaron getting 28:12 and Ray a 24:52 for his second best flight. The Romanians did move up, with Somodi's 27:39, Pascu's 27:51 and Dascalu's 28:00. If they improved in the last round, it could be curtains for the US.

At last the end of the ordeal was in sight. Round 6 started with Brett flying. It was a conservative flight, landing at 31:48. However, he had been improving his two-flight total every round until the sixth and only he and Amarattei had over 30 minutes on all six flights. This is a remarkable achievement, considering this was the first time Brett had competed as a senior in a World Championships.

Kagan made his last attempt and did his best flight, a 32:09. Not enough to catch the Romanians, but a respectable posting to show he had put everything into it that he could. Cailliau went through the motions of flying, but it he couldn't make up the difference with one flight. As he started to wind up, we watched Mangalea launch. He always is a big threat and all he needed was one spectacular flight to push Larry out of first. Alas, the model stalled down to the ground after having reached 50 feet.

But wait, it's not over. Schramm of Germany had a 34:42 in the second round and could win if he got a 35:41, not impossible. The last one in the air, he missed getting past the catwalk and flew for 34:47. Unfortunately, he pushed Doug Schaefer to fourth place. Wouldn't that have been something if Doug had won a place on the podium with his first entry as a senior?

The juniors had a 4:04 lead entering round six. Ethan had put it together in rounds 4 and 5 with flights of 28:12 and 28:52 and was first to fly in round 6. He wound to the max and did a 28:58. That was his best time and put him in first place individually and possibly Junior Champion. Justin Young was up next. He had no problem in previous rounds getting his plane to climb and thought if he wound for broke and got some lucky bounces he had a chance to break 32:00. After an arithmetic lesson Justin realized he was in second

place by 32 seconds and would only need a 26:46 to take over the lead and be Junior Champion. Justin did back off more than he originally wanted and still did a nice safe 30:05 to regain the lead. Nick Ray had damaged his model in round 4 and put together components from various models. His quarter motor test flights showed promise. His fifth round 24:52 was a good flight considering it only climbed to about 150 feet. Nick's sixth round flight started out nicely but just didn't climb.

The US took three out of four possible first places, along with second place individual in Junior. All this in a formidable site where we don't get to practice much. That certainly is a fitting tribute to the hard work every team member endured to reach these goals.

What hasn't been mentioned yet is the effort by the Hungarian team. Despite the broken knee cap, Andras Ree flew very well, placing 13th. His teammates did better, with Orsovai at 9th and Sukosd at 11th, to give them third place Team, a remarkable performance considering the circumstances. Twelve countries participated; eight had full teams. Four countries competed in the junior event, all with full teams. Aurel Morar gave a passionate plea during the Team Managers' meeting for everyone to help and encourage juniors to get into our sport. The seniors keep getting older without replenishment with new participants. While this is true for the rest of the world, we, in the US, have been very fortunate to have gained interest as the result of Science Olympiad. All three junior fliers and seniors Brett Sanborn and Doug Schaefer had their start in the Science Olympiad program. All have made tremendous progress in just a short time.

Seniors

Place	Name	Country	1	2	3	4	5	6	Total
1	Larry Cailliau	USA	35:14	35:08	30:30	33:56	33:22	00:00	70:22
2	Aurel Popa	ROM	33:04	35:13	34:59	30:55	32:31	12:14	70:12
3	Lutz Schramm	GER	10:09	34:42	31:14	12:38	32:04	34:37	69:19
4	Doug Schaefer	WCh	30:11	26:16	15:11	34:09	34:29	13:28	68:38
5	Cornel Mangalea	ROM	33:42	34:27	15:29	32:12	32:03	01:53	68:09
6	Fred Tellier	CAN	30:23	27:35	33:15	28:14	34:31	33:28	67:59
7	Brett Sanborn	USA	32:49	33:29	33:12	34:03	33:42	31:48	67:45
8	Dan Amoraritei	ROM	30:30	31:58	31:35	32:41	34:20	31:29	67:01
9	Deszo Orsovai	HUN	31:45	33:49	01:35	19:12	32:43	31:43	66:33
10	John Kagan	USA	24:44	10:40	32:02	08:54	31:03	32:09	64:11
11	Zoltan Sukosd	HUN	29:54	29:06	29:58	30:31	31:15	11:52	61:46
12	Slobodan Midic	SCG	28:28	30:44	12:04	29:32	26:37	11:20	60:16
13	Andras Ree	HUN	30:31	29:16	27:06	29:14	00:00	26:41	59:47
14	Jerzy Markiewicz	POL	29:34	18:49	21:35	28:28	28:26	20:09	58:02
15	Thierry Marilier	FRA	27:10	27:38	11:30	27:22	30:13	00:21	57:51
16	Derek Richards	UK	26:56	11:16	26:46	23:39	29:47	21:09	56:43
17	Ivan Treger	SVK	22:09	24:26	26:41	27:52	26:12	25:00	54:33
18	Josef Kubes	CZE	27:18	25:21	25:24	24:46	26:08	s6:28	53:46
19	Karl Schonfelder	GER	22:00	27:00	23:48	00:00	26:44	25:01	53:44
20	Klara Kaplanova	CZE	22:19	20:10	20:18	28:35	24:53	17:48	53:28
21	Nicholas Aikman	UK	23:23	24:14	25:30	01:47	24:23	27:26	52:56
22	Jan Dihm	POL	24:37	00:17	27:18	24:57	18:26	17:00	52:15
23	Geoffrey Lefever	UK	25:03	01:09	25:55	21:18	25:40	00:08	51:35
24	Uwe Bundesen	GER	26:24	00:53	25:07	00:50	22:52	21:09	51:31
25	C. Raymond-Jones	CAN	21:00	24:31	24:56	26:28	17:31	21:06	51:24
26	Hideyo Enomoto	JPN	25:30	21:22	25:17	24:18	25:48	00:20	51:18
27	Mikita Kaplan	CZE	17:34	23:05	25:45	24:35	23:46	24:43	50:28
28	Robert Champion	FRA	16:05	20:41	21:41	21:30	25:44	01:12	47:25
29	Edward Ciapala	POL	19:18	24:38	20:43	19:22	00:00	00:00	45:21
30	Didier Barberis	FRA	08:15	27:42	02:21	02:18	12:44	13:09	40:51
31	Yasutaka Tanaka	JPN	09:18	11:58	18:03	16:20	14:57	14:21	34:23

Juniors

Place	Name	Country	1	2	3	4	5	6	Total
1	Justin Young	USA	26:13	21:55	31:05	20:28	14:16	30:05	61:10
2	Ethan Aaron	USA	21:38	22:30	27:53	28:52	28:12	28:58	57:50
3	Zoltan Somodi	ROM	23:25	01:42	26:11	27:21	27:39	28:54	56:33
4	Ciprian Pascu	ROM	25:43	25:16	28:21	23:48	27:51	27:33	56:12
5	Nicholas Ray	USA	27:00	05:35	23:28	00:00	24:52	17:53	51:52
6	Gabriela Kaplanova	CZE	21:38	18:59	20:10	16:57	19:06	29:26	51:04
7	Alexandru Dascalu	ROM	06:48	20:19	21:10	23:00	28:00	01:16	51:00
8	Tomas Demidowicz	POL	00:08	15:15	19:16	20:07	25:00	18:45	45:07
9	Jan Klik	CZE	22:06	08:11	20:05	21:38	21:49	17:43	43:55
10	Klaudia Kwieciak	POL	14:38	22:48	21:00	00:00	05:33	05:36	43:48
11	Krzysztof Mures	POL	15:46	21:24	19:49	16:29	17:18	16:16	41:13
12	David Sanda	CZE	04:39	11:32	10:30	13:31	08:57	07:19	25:03

Senior Team

1	Romania	205:22
2	USA	202:18
3	Hungary	188:06
4	Germany	174:34
5	UK	161:14
6	Check Republic	157:42
7	Poland	155:38
8	France	146:07
9	Canada	119:23
10	Japan	85:41
11	Serbia	60:16
12	Slovakia	54:33



SENIOR TEAMS

Junior Team

1	USA	170:52
2	Romania	163:45
3	Poland	130:08
4	Check Republic	120:02



JUNIOR TEAMS

(PICTURES BY ANDRAS REE AND AUREL POPA)



SENIOR INDIVIDUALS



RAY HARLAN, LUTZ SCHRAMM AND UWE BUNDESEN



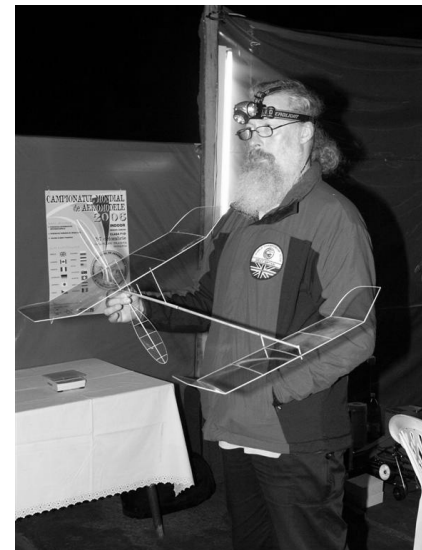
FRED TELLIER



AUREL POPA



ANDRAS REE



NICK AIKMAN

THE DORCOL CUP FOR F1D BELGRADE

Voja Stojkovic

This year, the 17th to 20th of August, the chosen dates for the Dorcol Cup were the hottest of the year in Belgrade. The temperature was in the 30's and it went up to 38C on the Sunday of the contest; Dezso Orsovai measured it at the ceiling. The local sports newspaper carried articles about the contest for 3 days and quoted my comment that "it would be a hell of a time for the contestants, but excellent for the flight times if the weather stayed so hot".

During practice on Friday, Lutz Schramm and Dezso Orsovai both managed very long flights and Dezso did over 34 minutes without climbing above 8 metres (the hall has a max height of 22 metres). Other fliers including Ivan Treger also showed great potential. A supply of helium was on hand as well as accurate scales and measuring equipment and refreshments to keep the contestants/organizers/and everyone else going. This year, all the windows were blacked out with reflective black foil, courtesy of Mercedes who used the hall during an earlier car fair.

Saturday 19th.

The two days of official contest began with an opening ceremony before the first flights at 2:00 pm. It was agreed to run 3 X 2 hour rounds a day, ending at 8:00 pm as a rehearsal for the European F1D Championships in 2007. Dezso Orsovai made a flight just 3 seconds below the existing record, but an exploding motor in a test flight destroyed this model at the end of the day. Lutz Schramm was only 9 seconds behind at this stage.

Sunday 20th.

We started an hour earlier at 1:00 and the air was at its calmest on the final day. The top models did not use the whole height of the hall. Dezso only climbed to around 16 metres and Lutz Schramm stayed 2 metres below the ceiling – he said that he thinks this is the best option, maybe to avoid the turbulence near the ceiling. Lutz was using October '97 rubber, but for the new Cat III record of 34:47, he used a motor made from May '99 and given by Slobodan Midich. Lutz used one of his elliptical dihedral models for part of the contest, but he blew up 2 models during the event. Both Lutz and Dezso used crinkled Y2K/2 film and Lutz also used a prop with moulded Kevlar outlines to the blades.

Although the hall is quite small, I only saw was one collision and there were probably very few in total. There wasn't much steering needed.

When we left at nine o' clock on Sunday, after the awards ceremony, it was dark and the temperature was still 32 degrees! An excellent contest with some spectacular flights.

Best regards,
Voja, Svetlana, Mira Stojkovic

Report by Contest Organiser Voja Stojkovic, with additions by Andras Ree and Slobodan Midich.

Indoor Model Specialties

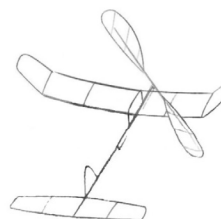
High quality, Low prices

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See my brochure under Links at
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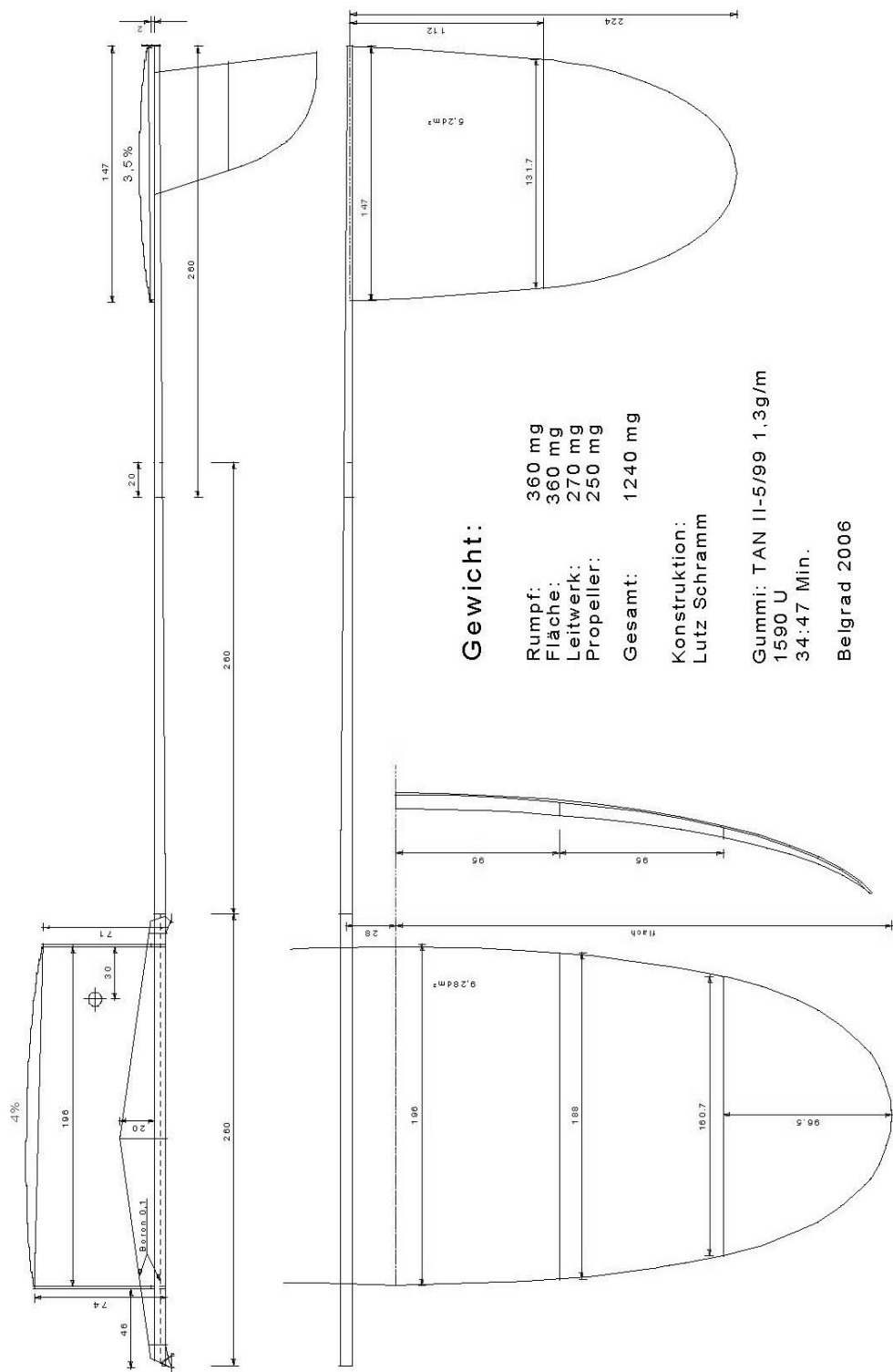
Mastercard and Visa accepted

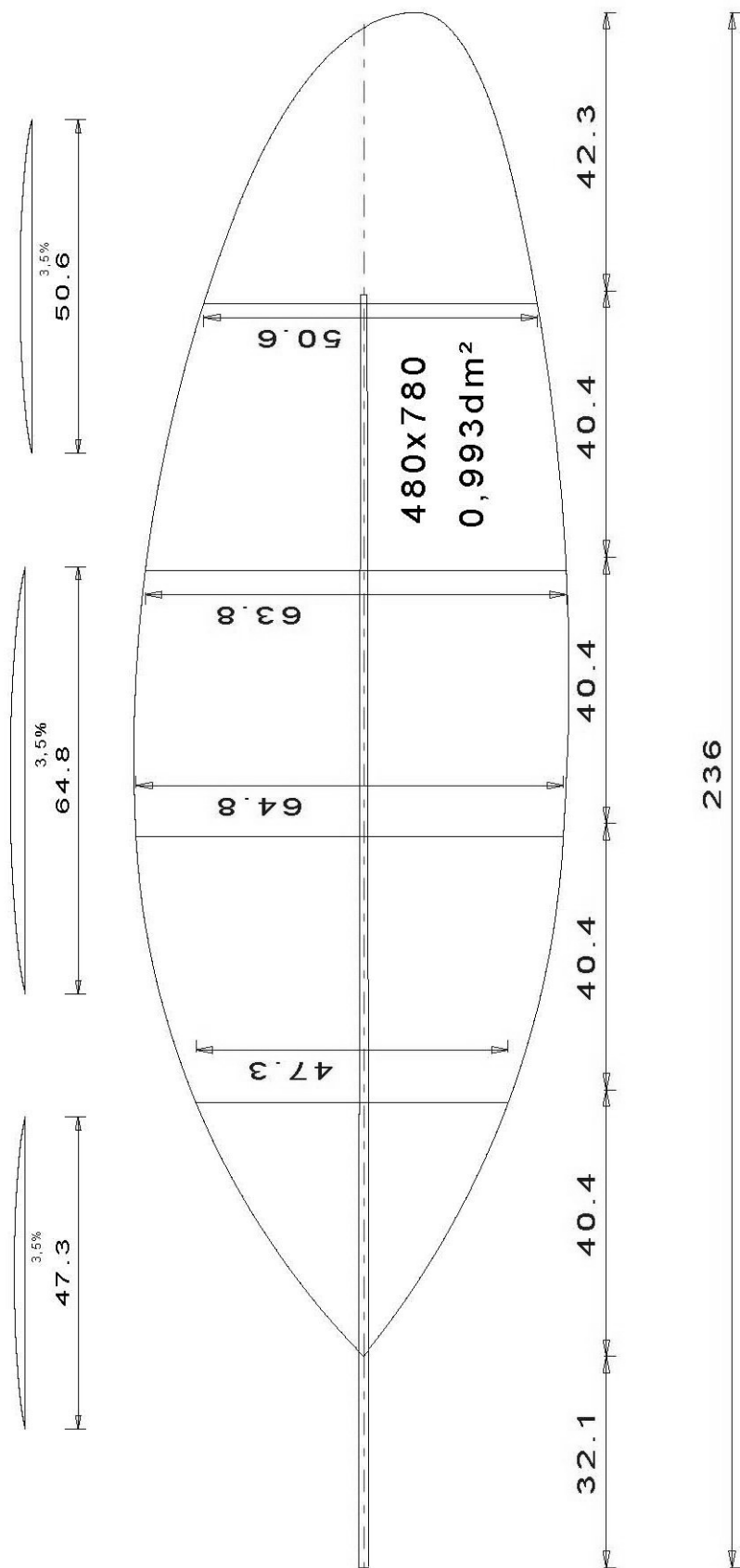




NEW CAT III F1D WORLD RECORD

LUTZ SCHRAMM — 34:47 UNDER 22 METRES — 2006 DORCOL CUP IN BELGRADE





8TH. TABARCA CUP

SPAIN – SAF-15 – INDOOR



VIEW FROM HOTEL FERIA OF THE MONUMENTAL VELODROM LUIS PUIG

Burjassot, Velòdromo Luis Puig VALENCIA July 15-16 of 2006

This year the conditions were favorable to enjoy a good Indoor competition. We had participants from the Czech Republic, Chile, Spain, France and Great Britain. We enjoyed one of the best pavilions in Europe for the practice of this sport, and also we were fortunate to have an excellent team of judges and timekeepers in keeping with the high level of the competition.

If the outside of the velodrome is spectacular, the first impression of the interior is not less so.

The pavilion staff were vital to keep the pavilion air tight and safe enough to fly all around the velodrome, without any air movement during the flying of the lighter models. As a consequence, the high humidity of those days made us sweat a lot.

13 contestants took part in 6 indoor categories:

Duration: F1D, F1L, F1M, F1N

Scale: F4F, F4D



F1D

12 contestants took part in the F1D event. With the results in doubt up to the last flights. Mikita Kaplan from the Czech Republic had the high time of 32' 57", but Didier (from France) had two flights of 32' 50" and 32' 32" winning the competition by only 5 seconds. Both improved their personal records in this competition. The group of "more than 30 minutes" also included Zdenek Cinert from the Czech Republic. Manuel Ángel Díaz and Daniel Medina (both Spanish) scored close to 30 minutes, but still need a little improvement to exceed it. Maybe next year? Mikita's daughters, Klara and Gabriela showed us that this is also a sport for girls. They always performed their flights with a smile on their faces.



THE CHAMPION'S MODEL, DIDIER, LIFTING OFF. THE FUSELAGE AND THE WINGS ARE TWISTED BY RUBBER TENSION. IT IS CLEAR THAT HE IS CLOSE TO THE LIMITS OF HIS MODEL



MIKITA READY FOR FLYING. TAKE NOTE OF DANIE'S FACE BEHIND HIM



KLARA LAUNCHING



GABRIELA AND HER MODEL



JAUME IN ACTION



"MANU"



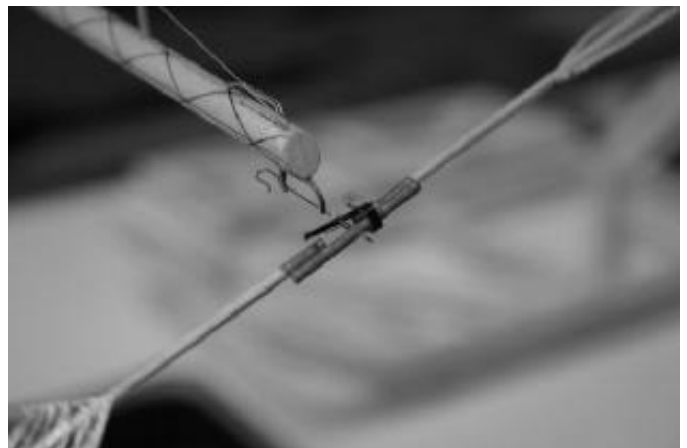
JUANJO, OUR BEST JUDGE FOR SCALE, TIMING



CLIVE KING WALKING CLOSE TO HIS MODEL



MODEL USING ALL THE AVAILABLE HEIGHT



VP Hub



COLLISION ON THE AIR

F1M and F1N (Hand Launched Gliders)

Clive King from England won F1M, and Daniel Medina won F1N.

F1L

The F1L competition also had many competitors. Manu and Daniel, both Spanish, were first and second, third was Mikita from Czech Republic.



DAVID WITH HIS WELL-KNOWN MODEL

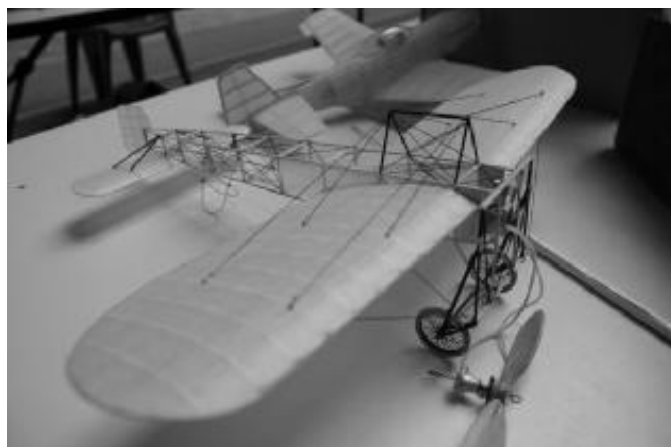


CZECH MODELS

SCALE

F4F

Six contestants took part in this category. Daniel's Spanish Fury won by a wide margin, taking first place with flying times and second place in static judging. We saw some masterpieces like the Andrés Gonzalez's Bleriot XI.



BLERIOT XI



DANIELL'S SQUADRILLE



JAUME'S TEXAN



CZECH MODELO

F4D

In F4D only 3 contestants took part. The best were the Daniel's models.

CURIOSITIES



BALLOON STEERING



THINKING ON CUSTOMS



AWARDS



CZECH TUNED VAN



HOMAGE TO THE ORGANIZER LUIS FONT



GROUP PHOTO

The International after-effect has been positive, The excellent conditions in the pavilion that allowed very good flight times, and the good organization augur an increased participation in 2007.

We are sincerely grateful to the collaboration of the Sports Municipal Foundation of Valencia, to the Federation of air sports of the Valencian Community, to the Conselleria of Culture, Education and Sports of the Valencian Community and to the Judges and Timekeepers who sweated a lot to make possible the celebration of this contest for one more year.

ENRIQUE P. LLEDÓ SOLBES
FERNANDO HARO MARTÍNEZ
JUAN JOSE HARO MARTINEZ
JUAN MANUEL CARO FERRANDEZ
JAIME GARCIA QUILES
BERNARDO RUIZ SÁNCHEZ
PASCUAL POLO MARTÍNEZ

Alicante 20 of July of 2006.

Fernando Haro Martínez
Vice presidente of SAF-15 club

Translation by Luis Font, sorry for the mistakes I have made.....

PRESS RELEASE

PURVEYOR OF THE WORLD'S BEST Balsa IS NEW OWNER OF LEGENDARY KIT COMPANY

Englewood, Colorado. January 10, 2007 - A new era for model airplane kit maker Peck-Polymers is dawning. Tim Goldstein, an AMA Life Member from Littleton, Colorado, has bought the company, and has bold plans for it. For thirty-five years Peck-Polymers has been a top supplier of high-quality kits and supplies to the model airplane world. Best known as the manufacturer of very popular Free Flight (FF) kits, especially Peanut Scale, Peck has persevered in recent years, despite the death of founder Bob Peck in 1990. Bob's wife Sandy took over after that, managing to steadily expand the operation during that time.

"The reputation of Peck's small rubber-powered Free Flight kits is unmatched," says Goldstein. "The tradition of top-quality kits in Peck's signature orange boxes will continue." Goldstein's immediate plans include improving the Peck line by upgrading the kits to laser-cut. "It is clear that laser-cutting is highly valued by the kit-buying public. By offering laser-cut parts in the new Peck kits, their reputation will only improve, while also increasing accuracy and ease of construction."

Other signature Peck products are their many accessories for rubber power including propellers, thrust bearings, and wheels. Peck will also continue to offer their well-received small R/C airplane kits. But FF modelers worldwide crave Peck's rubber-powered kits in the orange boxes, among them the famous Lacey M-10, Nesmith Cougar, and Prairie Bird Embryo. Goldstein also envisions upgrading the FF kits to include instructions on converting from rubber to electric power.

Goldstein is no amateur as a model airplane supplier. He already enjoys a great reputation for the world-class "Tru-Weight" balsa wood he sells at www.F1D.biz. In addition to the laser-cutting, Goldstein has updated Peck's website which now features a full storefront for on-line ordering. The site will accept Visa, Mastercard and PayPal. The new website will also include a regularly updated "Bargain Bin", where items will be deep-discounted for quick sale. Orders are currently being accepted for the new laser-cut kits, which will be available by February, 2007. Prices for the kits will increase slightly, to an average of \$18-20 each. Visit www.peck-polymers.com or call 720-283-7200.

2007 CONTEST SCHEDULE

UNITED STATES

Jan 20

This season at the National Building Museum will a little different than in previous years. The flying dates will be on Saturdays instead of Sundays. The Delta Dart sessions will be on the same day as our flying dates. The first flying date is scheduled for Saturday, January 20, 2007. For more details, contact Dan Driscoll, 6621 Wakefield Dr. Apt #417, Alexandria, VA 22307-6827, ddriscoll@pressroom.com

Feb 4

The Glastonbury Modelers holding an AMA sanctioned indoor contest at the Glastonbury High School, Glastonbury, CT. Flying is 8 am to 5 pm. An AMA membership is required. For information contact John Koptonak 860-434-1029, gliderguider@adelphia.net or Tony Lincoln 860-659-2457, tony.Lincoln@cox.net

March 25

The Magnificent Mountain Men Host a National Cup Sanctioned event at the Colorado Springs City Auditorium. All are Sundays 9am-5 pm. The Auditorium is 37' at its peak height, smooth ceiling with a few lights hanging down about 2'. Events are as follows: Std CLG, Unlimited CLG, HLG, Bostonian, F1L, Ministick, LPP, Pennyplane/F1M combined, FAC Peanut, FAC No-cal, EZB, A-6 Contact: Don DeLoach, 831 E. Willamette Ave., Colorado Springs, CO 80903, 719.964.7117 voice, ddeloach@adelphia.net

March 31

Cleveland Free Flight Society annual Indoor Contest, Kent State University Field House, Kent, OH., 7:30 am to 8:00 pm. Entry Fee: \$30 for Open, \$2 for Junior. This is a sanctioned AMA contest and Record Trials. Record Trials may be flown at anytime during the day. Record trials will have exclusive airspace rights from approx 4pm to 8pm.

- Non AMA Events: Jetco ROG , Phantom, WWII No-Cal Combat, No-Cal, GHQ Peanut Scale, Golden Age, Civil Scale, Dime Scale, WWII Combat flown at 12:30pm.
- AMA Events: HLG, Std CG, Unlimited CG, LPP, EZB, Ministick, 7gram Bostonian

Contact CD for FAC events: Michael C. Zand, 5803 East Ash Rd, Independence, OH, 216-524-3480, imzand@hotmail.com.

Contact CD for AMA events and Record Trials: Don Slusarczyk, 868 Eaglewood Dr., Willoughby, OH 44094, don@slusarczyk.com .

April 7

The Heart of America FF Association (HAFFA) holds their 2007 annual indoor contest at the Kansas City Bible School, 7401 Metcalf, Overland Park, KS. Details Emil Schutzzel, 913-341-7788

April 15

The Glastonbury Modelers as above.

April 21,22

The Willamette Modelers Club of Albany, Oregon is hosting an Indoor Record Trials and Symposium in the South Albany High School Gym, 3705 S. Columbus St, Albany, OR. 36' Ceiling. Peanut Scale, AMA Scale, NoCal, Bostonian, Moorhead, JSO Science Olympiad. Plus Duration Events EZB (1/4 motor), LPP, A-6, Ornithopter, Ministick, AROG.

CD John Lenderman, 17086 Hall Rd., Clatskanie, OR 97016

April 28,29

The Chicago Aeronuts host their 2007 Midwestern States Indoor Champs in the University of Illinois ROTC Armory, 505 E. Armory Dr., Champaign, IL 61812. \$20.00 entry fee if received by end of March, \$30.00 on site. AMA, FAC, FAI, Delta Dart, Double Whammy, and SO events, all are JSO combined. CD Robert Warmann, 630-834-9075, 245 N. Oaklawn Ave., Elmhurst, IL 60126.

May 26-28

The East Coast Indoor Modelers (ECIM) host an AA Sanctioned Memorial Day Indoor Meet in Lakehurst Hangar #1.. The hangar is 800 ft. long by 250 ft., and 190 ft. high. You must be a member to gain entry to the base. To join ECIM and for a list of events, contact Rob Romash, 1442 Kirkham St., Colorado Springs, CO 80910, 719-359-6999, or at cgrain1@yahoo.com.

2007 CONTEST SCHEDULE

May 30-June 3

United States Indoor Championships (USIC), East Tennessee State University Minidome, Johnson City TN. Full roster of AMA, FAI and FAC events. A world-class 119 ft. site. We are looking for volunteers, judges, and assistant CD's to help in all areas. Contact Tony Pavel CD. paveltony@gmail.com.

June 30-July 1

The East Coast Indoor Modelers (ECIM) host a Sanctioned AA July Fourth Indoor Meet the weekend before the 4th in Lakehurst Hangar #1. You must be a member to gain entry to the base. To join ECIM. Contact Rob Romash as above.

July 6-10

Kibbie Dome Annual, University of Idaho, Moscow, ID, a world class site with 144' ceiling. Fly four days, 8am to 8 pm. CD Andrew Tagliafico 503-452-0546.

Sept 1,2

The East Coast Indoor Modelers (ECIM) host a Sanctioned AA Labor Day Indoor Meet in Lakehurst Hangar #1. You must be a member to gain entry to the base. To join ECIM. Contact Rob Romash as above.

EUROPE

Dates taken from the calendar on Indoor Duration Models Great Britain, <http://groups.msn.com/INDOORDURATIONMODELSGB>, and please note that members can post events on there at any time

May 18- May 20

Tabarca Cup - Luis Puig Velodrome. Valencia. Spain.

This is provisional info from Luis Font Bellot. The site is an excellent, new velodrome, 35 metres high. Last year, the classes were for F1D, F1M, F1L, F1N, F4F and F4D. Contact Luis Font Bellot at <tyekanik@hotmail.com>

May 25 - May 26

Swedish Indoor Championships - Kombihallen, Stadium area, Malmoe, Sweden

Category II, more info and applications to wakejanerik@yahoo.se

June 1 - June 3

6th Trofeo Ai Canipai - San Romano in Garfagnana. Italy

Events are F1D with half motors, F1L, F1M modified, TH, Ministick, F1N and catapult Glider. Site is 12 metres with a curved ceiling.

August 9 - August 12

15th Dorcol Cup - Belgrade Trade Fair. Serbia

Open International contest for F1D models. Contact Vojislav Stojkovic at aviomodeli55@yahoo.com for site and contest details.

August 24 - August 26

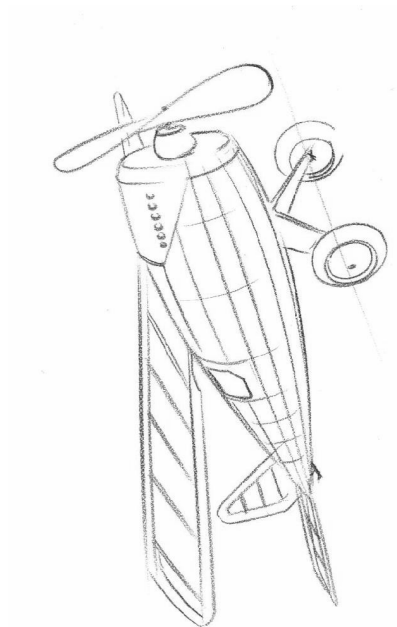
Open International for F1D and 35 cm class - Hall 1 of the Belgrade Trade Fair. Serbia.

To be held, just before the 2007 F1D European Championships - possibly in the same hall which is about 30 metres high.

August 26 - September 1

2007 European F1D Championships - Hall 1 Belgrade Trade Fair. Belgrade. Serbia

Contest is for Seniors and Juniors and organised by Aero Club "Aerolux" on behalf of the Aeronautical Union of Serbia. Contact the CD, Ljubomir Radosavljevic at aerolux@sezampro.yu for more info, or go to www.akaerolux.com.



Straight Line Speed

Name	AMA #	1	2	3	4	5	Best	Place
Sova, Tom	473169	2.50	1.45	1.35	1.10		1.10	1
Lewis, Jim	119	1.85	1.80	1.45	1.46	1.30	1.30	2
Peterson, Richard	151145	2.30	2.30	2.40			2.30	3
Diebolt, John	5286	2.75					2.75	4

35cm

Name	AMA #	1	2	3	4	5	Best	Place
Sova, Tom	473169	27:36	28:20				28:20	1
Leppard, William R.	93740	15:59	20:00	23:25			23:25	2
Harlan, Ray	131	21:10	10:37	18:12	23:18		23:18	3
Raymond-Jones, D. C.	13157	17:46	20:34	21:49	8:43	7:18	21:49	4
Ray, Nicholas ***	770974	12:14	21:40	8:43	9:40	21:43	21:43	5
Olshefsky, Peter	Can864L	15:01	14:32	8:53	16:24	19:24	19:24	6

Race to the Roof

Name	AMA #	1	2	3	4	5	6	7	8	9	Best	Place
Harlan, Ray	131	18.8	10.0	8.1	6.2						6.2	1
Nunez, William	0	9.2									9.2	2
Collins, Walter	249365	21.7	16.6								16.6	3
Carney, Bill	83252	25.8									25.8	4

THURSDAY, JUNE 1ST

Hand Launched Stick

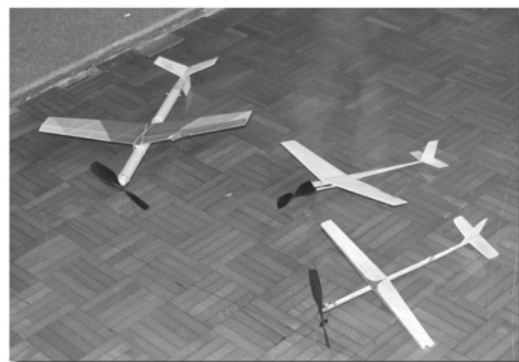
Name	AMA #	1	2	3	4	5	Best	Place
Leppard, William R.	93740	31:31					31:31	1
Richmond, Jim	4936	26:48					26:48	2

Bostonian

Name	AMA #	1	2	3	4	5	Best	2nd Best	Flt Total	Charisma	Total	Place
Schutzell, Emil	508384	2:19	5:03	5:35	3:24	4:47	5:35	5:03	10:38	1.18	12:33	1
Diebolt, John	5286	5:01	4:55	4:30	4:14		5:01	4:55	9:56	1.17	11:37	2
Barker, John	2095	4:22	3:14	4:14	4:24		4:24	4:22	8:46	1.13	9:54	3
Rash, Fred	63458	2:41	3:03	3:38			3:38	3:03	6:41	1.07	7:09	4
Nunez, Paul ***	787832	1:24	1:21	1:30	2:10	1:55	2:10	1:55	4:05	1.12	4:34	5
Nunez, Jonathan ***	726193	0:39	2:44				2:44	0:39	3:23	1.15	3:53	6
Van Dover, Abram	894	0:19	0:26	0:25			0:26	0:25	0:51	1.09	0:56	7

A-ROG

Name	AMA #	1	2	3	4	5	Best	Place
Loucka, Larry	1210	18:39	20:20	17:05	19:43	17:52	20:20	1
Sanborn, Brett	748651	19:34	16:58	14:59	4:19	18:15	19:34	2
Harlan, Ray	131	13:36	17:17				17:17	3
Diebolt, John	5286	8:22	11:43	9:11		8:10	11:43	4



FAC Peanut

Name	AMA #	Aircraft	Const. Det.	Color & Markings	Workmanship	Bonus	1st	2nd	3rd	Points	Score	Place
Hodson, Gary	787832	14 Bis	29	19	12.5	25	132	143		85.5	168.0	1
Nunez, George	55573	Mustang	24	17	11.0	10	39	71	71	62.0	127.5	2
Nunez, Paul ***	336184	Zippy Sport	21	16	10.0	0	72	67	75	47.0	114.5	3
Nunez, Jonathan ***	FALSE	Mustang	25	18	11.5	10	39	44	30	64.5	108.5	4
Schultz, Katie	669378	Pasped Skylark	26	19	12.0	0	30	26	22	67.0	97.0	5
Gilbert, Sidney	726193	Zippy Sport	22	15	7.5	0				44.5		
Sholder, Barry	1803	Fike	19	12	8.0	0				39.0		

Hing Wing Monoplane

Name	AMA #	Aircraft	1st	2nd	3rd	Score	Place
Gilbert, Sidney	1803		112	72	71	45	1
Blair, John C.	29698		79	70	79	45	2
Jessup, Artie	10269		71	50	75	45	3

Modern Civil

Name	AMA #	Aircraft	Score	Place
Stevens, Robert	615257		1	1

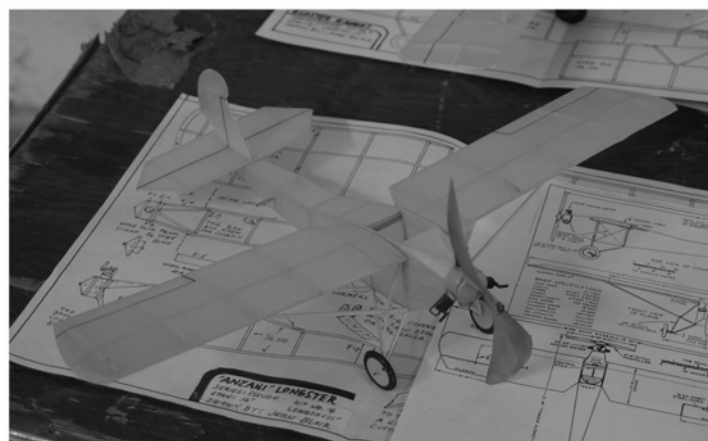
WWI Mass Launch

Name	AMA #	Aircraft	Time	Place
Loucka, Larry	1210		0:00	1
Stevens, Robert	615257			
Lavender, Tim	37167			
Hodson, Gary	669378			
Pavel, Anthony	4168			
Blair, John C.	29698			
Carney, Bill	83252			
Anderson, Wayne	587497			



Unlimited Rubber Speed

Name	AMA #	1	2	3	4	5	6	7	8	9	Best	Place
Collins, Walter	249365	9.6	9.5	9.8	10.0	Att	9.4	8.9			8.9	1
Diebolt, John	5286	att	att	14.7	att	Att	att	10.0	att	att	10.0	2
Jessup, Artie	10269	22.6	att	att	att	Att	att	att	att	10.5	10.5	3



FRIDAY, JUNE 2ND

Ministick

Name	AMA #	1	2	3	4	5	Best	Place
Loucka, Larry	1210	11:10	11:27	11:54	12:41	12:32	12:41	1
Van Gorder, Walter P.	19912	11:51	12:12	12:38	11:26		12:38	2
Hodson, Gary	669378	0:10	0:11	11:02	11:59	2:59	11:59	3
Sova, Tom	473169	11:39	4:03	11:54	11:53	11:35	11:54	4
Collins, Walter	249365	10:15	11:37	10:48	9:28		11:37	5
Sanborn, Brett	748651	11:23	3:32	7:00	11:20	10:34	11:23	6
Schutz, Emil	508384	9:25	10:57	11:20	2:53	7:23	11:20	7
Rash, Fred	63458	11:15	2:21	9:15			11:15	8
Brown, Steve	128759	10:06	5:08	11:06			11:06	9
Diebolt, John	5286	11:01	9:28				11:01	10
Ray, Nicholas ***	770974	10:51					10:51	11
Alvarez, Phil	851278	10:26	7:50	10:10	10:04		10:26	12
Warmann, Robert C.	187	10:19	10:08				10:19	13
Singer, Len D.	209081	9:22					9:22	14
Hood, Jeffrey	824593	7:10	0:03	0:03	9:06	2:33	9:06	15
Jessup, Artie	10269	8:12	7:20	7:36	8:57	5:10	8:57	16
Slusarczyk, Chuck	2643	6:43	8:13				8:13	17
Sholder, Barry	55573	5:15	4:45	5:13	3:23	2:41	5:15	18
Van Dover, Abram	894	2:37					2:37	19



EZB

Name	AMA #	1	2	3	4	5	Best	Place
Richmond, Jim	4936	30:06					30:06	1
Zaluska, Max	774565	24:42	27:21	27:58			27:58	2
Cailliau, Larry	79985	26:15	20:03	25:29	26:57		26:57	3
Harlan, Ray	131	24:23	22:02	20:32			24:23	4
Hood, Jeffrey	824593	16:34	20:48	11:20	8:02	20:14	20:48	5
Tellier, Fred	Can9125	10:04	18:14	18:40			18:40	6
Lemel, A. Lawrence, MD	5028	17:51	16:45	16:59	14:30	11:34	17:51	7
Batte, Thomas C.	17842	7:36	8:13	7:55	11:20	14:58	14:58	8
Kagan, John	469254	13:50					13:50	9
Singer, Len D.	209081	12:00	9:34				12:00	10
Italiano, Tony	2386	10:08	8:24	11:22	7:25	10:02	11:22	11
Van Dover, Abram	894	9:26					9:26	12



F1L

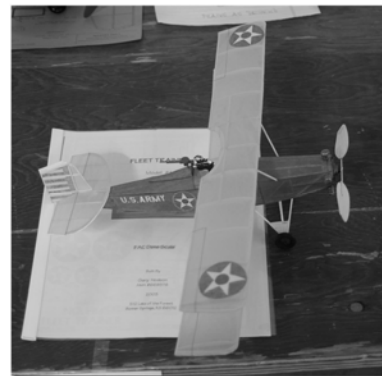
Name	AMA #	1	2	3	4	5	6	Best	2nd Best	Total	Place
Kagan, John	469254	20:40	20:38	20:40				20:40	20:40	41:20	1
Gowen, Bill	6157	18:26	0:42	17:03	19:51	19:51	19:10	19:51	19:51	39:42	2
Leppard, William R.	93740	14:52	18:21	18:14	5:12			18:21	18:14	36:35	3
Sova, Tom	473169	16:48	16:50	19:24	5:03	6:24		19:24	16:50	36:14	4
Olshefsky, Peter	Can864L	18:02	17:14	14:17	13:39			18:02	17:14	35:16	5
Richmond, Jim	4936	15:00	16:45	17:32				17:32	16:45	34:17	6
Slusarczyk, Chuck	2643	15:53	16:20					16:20	15:53	32:13	7
Hood, Jeffrey	824593	10:08	10:12	15:30	16:20			16:20	15:30	31:50	8
Collins, Walter	249365	15:32	4:56	15:56	13:55	14:28		15:56	15:32	31:28	9
Diebolt, John	5286	14:53	11:55	15:53	11:35	15:32		15:53	15:32	31:25	10
Raymond-Jones, D. C.	13157	13:56	6:06	13:58	14:26	14:46		14:46	14:26	29:12	11
Brown, Steve	128759	20:07						20:07		20:07	12
Singer, Len D.	209081	14:54		3:15				14:54		14:54	13
Wrzos, Chester	20454	8:06						8:06		8:06	14
Landrum, Billie	52674	7:05						7:05		7:05	15

AMA Peanut Scale

Name	AMA #	Aircraft	Static	1	2	3	4	5	6	7	8	9	Best	2nd	Total	Place
Hodson, Gary	669378		125.0	115.0	140.0								125.0	115.0	245.0	1
Blair, John C.	29698		85.5	45.0	75.0	78.0							78.0	75.0	162.0	2
Nunez, Paul ***	787832		81.0	79.0	61.0	70.0	62.0	78.0	73.0	63.0	60.0	81.0	81.0	79.0	161.0	3
Nunez, George	324372		81.0	72.6	69.0	71.0							72.6	71.0	152.8	4
Nunez, Jonathan ***	726193		81.0	46.3	43.5	61.8	63.2	61.0	68.0	53.0	65.0	65.0	68.0	65.0	147.5	5
Pavel, Anthony	4168		76.5	29.0	22.4								29.0	22.4	102.2	6

Dime Scale

Name	AMA #	Aircraft	Bonus	1st	2nd	3rd	Score	Place
Diebolt, John	5286	B.A.T. Mono	5	2:19	2:17	2:17	6.15	1
Hodson, Gary	669378	Fleet Trainer	15	1:06	1:53	1:57	5.41	2
Warmann, Robert C.	187	Arando	10	1:23	1:32	1:06	3.91	3
Blair, John C.	29698	Gloster Gannet	15	1:03	1:09	1:11	3.69	4
Carney, Bill	83252	P-40-E	10	1:11	1:00	1:06	3.41	5
Barker, John	2095	Curtiss Robin	0	1:19	1:13	1:00	3.32	6
Hickerson, Derek ***	773465	Martin MO-1	5	1:06	1:21	0:58	3.00	7
Van Dover, Abram	894	Martin MO-1	5	0:20	0:24	0:29	0.88	8



FAC Scale

Name	AMA #	Aircraft	Const. Det.	Color & Markings	Work.	Bonus	1st	2nd	3rd	Points	Score	Place
Nunez, George	324372	Avenger	25	18	11.5	10	81				146	1
Hodson, Gary	669378	Avro	28	18	12.5	5	49	61	45		128	2
Carney, Bill	83252	Mustang	25	18	11.5	10	56				111	3
Blair, John C.	29698	Waco	21	18	12.0	15						
Nunez, Jonathan ***	726193	Trojan	25	17	11.5	10						
Nunez, Paul ***	787832	Zippy Sport	21	16	10.0	0						

Wright Stuff Science Olympiad

Name	AMA #	1	2	3	4	5	Best	Place
Goins, Chris	800982	5:52	5:37	6:02			6:02	1
Voorhees, Tor****	0	4:46	4:57				4:57	2
Xue, Katherine	0	4:31	4:27	4:36	4:46		4:46	3

Balloon Launched Glider

Name	AMA #	1	2	3	4	5	Best	Place
Romasia	0	3:19	2:54	3:27			3:27	1
Van Dover, Abram	894	1:49	2:02				2:02	2
Nunez, Jonathan ***	726193	1:25	1:25	1:25	1:22	1:22	1:25	3
Carney, Steve	0	1:03	1:10	1:09	0:47	0:36	1:10	4
Nunez, William	0	0:52	0:55	0:59	1:00	0:58	1:00	5

SATURDAY, JUNE 3RD

Manhattan

Name	AMA #	1	2	3	4	5	Best	Place
Van Gorder, Walter P.	19912	10:28	12:48				12:48	1
Schutzell, Emil	508384	9:36	7:38	11:07			11:07	2
Slusarczyk, Chuck	2643	7:14	6:46	8:01	7:27		8:01	3

Helicopter

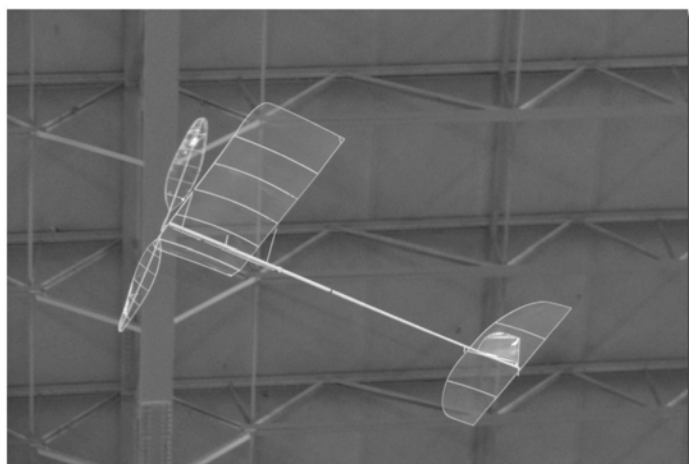
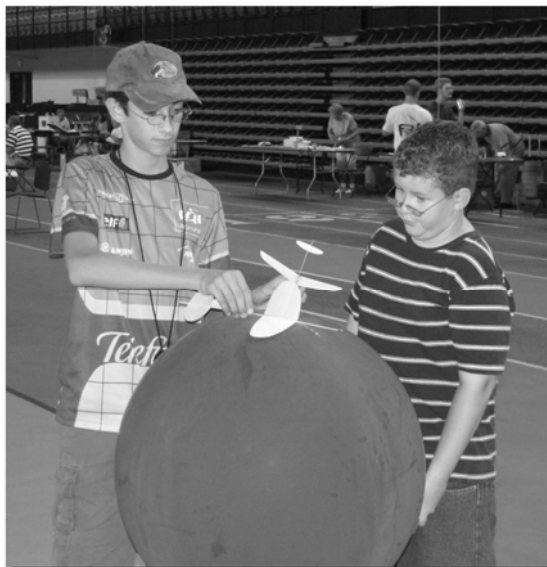
Name	AMA #	1	2	3	4	5	Best	Place
Richmond, Jim	4936	11:39					11:39	1
Diebolt, John	5286	6:14	4:49	6:59			6:59	2

Ornithopter

Name	AMA #	1	2	3	4	5	Best	Place
Harlan, Ray	131	14:00					14:00	1
Diebolt, John	5286	5:06	4:46				5:06	2
Ogino, Charlie ***	859030	0:28	0:43	0:44	0:46	0:32	0:46	3

Science Olympiad

Name	AMA #	1	2	3	4	5	Best	Place
Goins, Chris	800982	5:52	5:37	6:02			6:02	1
Swift-Spong, Kate***	0	4:43	4:38	5:09	4:44	5:17	5:17	2
Voorhees, Tor****	0	4:46	4:57				4:57	3
Xue, Katherine	0	4:31	4:27	4:36	4:46		4:46	4
Snow, Mary Katherine	0	3:16	3:42	3:22			3:42	5
Kang, Yejin ***	855510	2:59	3:14	2:58			3:14	6
Uliana, Joshua ***	Pending	1:28	1:15	1:35	1:48	1:38	1:48	7
Brown, Noah	0	1:41					1:41	8



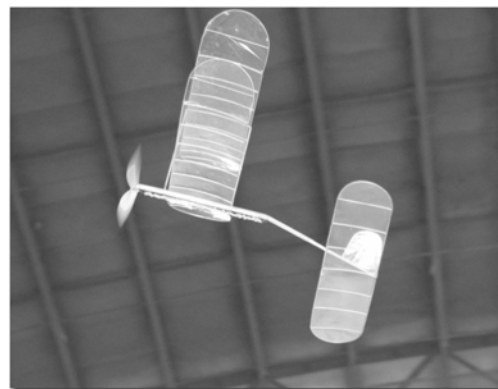
Pennyplane

Name	AMA #	1	2	3	4	5	Best	Place
Richmond, Jim	4936	16:29	17:14				17:14	1
Leppard, William R.	93740	15:30	13:41	15:43	16:45	16:45	16:45	2
Warmann, Robert C.	187	15:03	16:22				16:22	3
Iacobellis, Tom	6698	16:20	2:20				16:20	4
Harlan, Ray	131	14:30	16:12	14:35	15:23	15:26	16:12	5
Sova, Tom	473169	15:04	15:54	15:58	14:49		15:58	6
Olshefsky, Peter	Can864L	11:42	15:34	13:57	13:59	11:10	15:34	7
Alvarez, Phil	851278	10:57	14:36	14:34	4:32	15:25	15:25	8
Tellier, Fred	Can9125	15:12	15:05	14:42	11:40	15:20	15:20	9
Diebolt, John	5286	15:08	15:08	7:02			15:08	10
Loucka, Larry	1210	13:49	14:40	15:04	14:35	5:25	15:04	11
Kagan, John	469254	14:54					14:54	12
Gowen, Bill	6157	14:14					14:14	13
Zaluska, Max	774565	12:58					12:58	14
Hood, Jeffrey	824593	11:06	7:37	3:28	3:56	12:37	12:37	15
Carney, Bill	83252	11:56	12:21	12:31	11:57		12:31	16
Batte, Thomas C.	17842	7:44	8:56	10:28	11:59	12:15	12:15	17
Singer, Len D.	209081	7:39	8:58	11:02			11:02	18
Nuszer, Joe	29036	10:16					10:16	19
Italiano, Tony	2386	7:39	7:26	8:48	8:22	6:50	8:48	20



A-6

Name	AMA #	1	2	3	4	5	Best	Place
Sova, Tom	473169	4:21	9:28	9:46	10:21		10:21	1
Hodson, Gary	669378	8:39	8:50	10:05	9:34		10:05	2
Sanborn, Brett	748651	8:32	8:40	9:31	9:07	7:59	9:31	3
Gowen, Bill	6157	8:54	8:38	8:35	8:31	9:10	9:10	4
Goins, Chris	800982	8:43	8:55	8:26			8:55	5
Schutzell, Emil	508384	8:13	6:08	8:38			8:38	6
Collins, Walter	249365	6:46	7:04	8:12	7:26	7:38	8:12	7
Rash, Fred	63458	6:41	6:57	6:58	6:53	7:05	7:05	8
Hood, Jeffrey	824593	5:20	6:23	6:41	6:47	5:50	6:47	9
Singer, Len D.	209081	5:45	5:48				5:48	10
Diebolt, John	5286	5:27	5:25	5:16			5:27	11
Lemel, A. Lawrence, MD	5028	4:55	4:48	5:03	4:07	3:39	5:03	12
Sholder, Barry	55573	2:14	2:26	2:33			2:33	13
Van Dover, Abram	894	1:39	1:57	2:19			2:19	14



No-Cal

Name	AMA #	Aircraft	1	2	3	4	5	Best	Place
Slusarczyk, Chuck	2643		7:41	7:24	1:57	7:33		7:41	1
Loucka, Larry	1210		6:25	6:04	7:11	7:37		7:37	2
Diebolt, John	5286		5:07	5:36	6:00			6:00	3
Hood, Jeffrey	824593		4:02	3:57	4:45	5:03	5:48	5:48	4
Warmann, Robert C.	187		1:08					1:08	5
Sholder, Barry	55573		0:42	0:54				0:54	6
Whitford, Dale H.	7453		0:49					0:49	7

Coconut Mass Launch

Name	AMA #	Aircraft	Time	Place
Lavender, Tim	37167	Hord Hume	2:31	1
Stevens, Robert	615257	Curtis Robin		
Anderson, Wayne	587497	Fairy		
Schultz, Katie	336184	Taylorcraft		
Whitford, Dale H.	7453	Mauboussin		



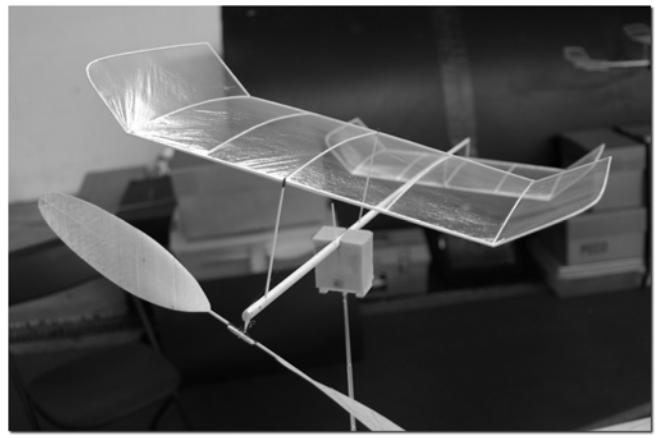
Golden Age

Name	AMA #	Aircraft	Score	Place
Anderson, Wayne	587497		10	1
Carney, Bill	83252		8	2

WWII Mass Launch

Name	AMA #	Time	Place
Hodson, Gary	669378	2:02	1
Stevens, Robert	615257		
Lavender, Tim	37167		
Pavel, Anthony	4168		
Blair, John C.	29698		
Carney, Bill	83252		
Anderson, Wayne	587497		





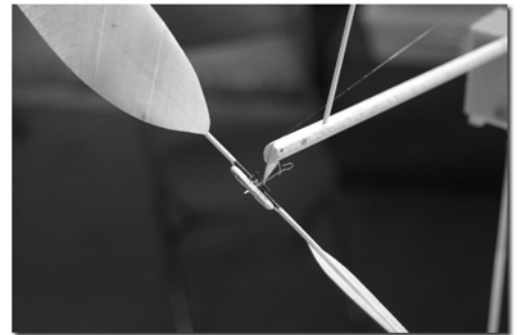
SUNDAY, JUNE 4TH

F1M

Name	AMA #	1	2	3	4	5	6	Best	2nd Best	Total	Place
Tellier, Fred	Can9125	4:19	19:02	18:38	19:03			19:03	19:02	38:05	1
Cailliau, Larry	79985	17:47	17:51	18:27	18:42			18:42	18:27	37:09	2
Gowen, Bill	6157	16:07	15:32	16:04	16:29	17:11		17:11	16:29	33:40	3
Goins, Chris	800982	15:47	15:51	16:59	14:33	15:50		16:59	15:51	32:50	4
Leppard, William R.	93740	14:21	15:56	16:03	16:14			16:14	16:03	32:17	5
Loucka, Larry	1210	12:05	13:19	14:22	15:08			15:08	14:22	29:30	6
Rash, Fred	63458	8:04	11:30	10:11	8:12	7:43		11:30	10:11	21:41	7
Diebolt, John	5286	5:20	9:08					9:08	5:20	14:28	8
Olshefsky, Peter	Can864L	10:25						10:25		10:25	9

Limited Pennyplane

Name	AMA #	1	2	3	4	5	Best	Place
Richmond, Jim	4936	10:01	14:20	14:05	15:16		15:16	1
Sanborn, Brett	748651	13:51	14:31	13:10	14:09	14:34	14:34	2
Van Gorder, Walter P.	19912	14:28	7:29	8:39	14:25		14:28	3
Sova, Tom	473169	13:22	13:51	14:20	14:23	4:32	14:23	4
Leppard, William R.	93740	10:54	13:54	3:06			13:54	5
Diebolt, John	5286	3:57	13:51	13:49	12:39	12:49	13:51	6
Zaluska, Max	774565	13:19	13:49				13:49	7
Kagan, John	469254	12:25	13:04	13:28	13:34		13:34	8
Alvirez, Phil	851278	12:35	13:20	3:24	0:15		13:20	9
Iacobellis, Tom	6698	13:18	12:58	3:44	8:59		13:18	10
Gowen, Bill	6157	12:23	12:22	12:58	13:15	12:05	13:15	11
Tellier, Fred	Can9125	11:59	12:57	10:20			12:57	12
Collins, Walter	249365	11:27	12:49	12:36			12:49	13
Olshefsky, Peter	Can864L	8:30	12:36	10:03	10:48	9:51	12:36	14
Warmann, Robert C.	187	10:41	12:36	12:10			12:36	14
Hood, Jeffrey	824593	11:49	10:59	9:51	11:23	11:31	11:49	16
Carney, Bill	83252	11:26					11:26	17
Raymond-Jones, D. C.	13157	10:10	2:53	8:42	11:12	10:53	11:12	18
Slusarczyk, Chuck	2643	9:16	9:04	10:41			10:41	19
Van Dover, Abram	894	7:53	8:51	7:02	7:27	10:15	10:15	20
Barker, John	2095	8:56	9:58	9:44	6:03	9:09	9:58	21
Campbell, Dann	346641	7:33	7:29	9:04	8:20		9:04	22
Batte, Thomas C.	17842	6:49	8:43	8:08			8:43	23
Italiano, Tony	2386	3:55	6:50	7:36	6:57	5:22	7:36	24



Electric FF

Name	AMA #	1	2	3	Best	Place
Harlan, Ray	131	27:30			27:30	1
Bakay, Carl	478659	0:11			0:11	2

USIC 2006 Album

May 31st to June 4th, Johnson City, TN



East Tennessee State University Mini Dome
Ceiling at 119 feet and "Very good air"



Gary Hodson from Kansas Garnished Maximum Dime
Scale Points for 2nd with his Fleet Trainer



Ray Harlan's Slo Lightning did 27:30 in Elec. FF.
Model has done 31:00 at West Baden



Hodson's Santos Dumont 14 Bis won FAC Peanut,
followed by George, Paul, and Jonathan Nunez



A Smiling Jim Lewis Won HLG by a Wide Margin.
Hey, 78 seconds is a long time, folks!



Rob Romash Came from Colorado Springs to CD the
Event, Assisted by John Kagan & Tony Pavel



Kurt Krempetz Nailed Firsts in Standard and Unlimited Catapult Glider



Tim Lavender and Two of his Smyrna Troop



Tom Iacobellis and Pennyplane Did 16:20 for Fourth Place. Model is 10 or 12 years old.



Immaculate Jonathan Nunez Air Camper His Family Placed 3, 4 and 5 in AMA Peanut



Also Immaculate – Jeff Hood's Work Table A Neat Space is a Sign of the Right Attitude



Chuck Slusarczyk and Ministick. Son Don didn't make it this year

Adding A little Color

The idea for dyeing the film came from Dr. Fred Rash at the 2002 USIC. I noticed a MiniStick that was circling up at the louvers. The odd thing about this was I could clearly see the model 110 ft up despite the white ceiling serving as a back drop. The reason was model was covered with a brightly colored film. When the model landed I asked Dr. Rash what the model was covered with. He kindly explained that it was conventional film that had been cooked in dye.

He warned me that dyeing the film is a messy endeavor best undertaken outside and from there on I began experimenting. Messy turned out to be an understatement, after coming dangerously close to replacing the stove and having to bleach the kitchen floor on several occasions. I have to say I owe a sincere thanks to my ultra supportive mom.

However, over time I improved on my methods and the results became consistently successful, and the dying process considerably less destructive to my kitchen. This is the method I have been using to produce film for the past few years:

To dye the film the following items will be needed. One large stainless steel cooking pot, the size will depend on the amount of the film to be dyed, a stainless steel spoon, some clean paper towels for resting and drying the film on, a container of warm water large enough for the film to spread out completely in, some aluminum foil, a bottle of liquid Rit dye, lastly your preference of Mylar film.

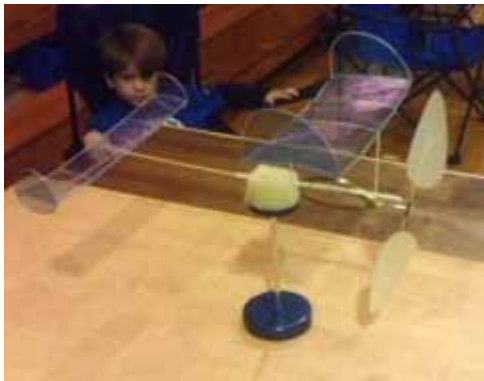
To create the solution in which to cook the film, first add one quart of water for every ounce of dye into the cooking pot and heat the solution until it reaches a rolling boil. At which point allow it to boil for five minutes to get any impurities or solid material out. Then add the film to the boiling solution and use a spoon to spread out the film such that all of the film comes in direct contact with the dye. If air pockets are allowed to remain, or if all the film is not exposed to the dye, a Swiss cheese color blotched looking film will result. Let the film cook for five minutes. After the film has cooked, take the film out using the spoon and let it cool on a paper towel with some aluminum foil underneath it to keep the dye from bleeding through onto its surroundings until it is possible for the film to be handled. Then place the film in a tub of warm water and spread it out. The goal is to wash all the excess dye off the film so that no extra weight remains. In talking to others, I have heard that there is sometimes trouble with the film decaying over time. I think this may be due in part to the chemicals in the dye that remain on the film if the film is not washed out.

After the film is rinsed, lift it out of the water and place it on a paper towel. The film will bunch up but not to worry after it dries, you will be able to spread it back out much like you do when crinkling film.

I have seen the film become brittle as it dries. As far as I have been able to tell, this is caused by the film drying out too quickly and as the film dries it sticks to itself, so when it is pulled apart it tears.

After the film has been unraveled, you can place it on a frame and use it like any other Mylar film. The dyeing process adds on average 8mg per 144 square inches. Also, using the Rit dye, I have not seen any signs of decomposition with the film regardless of its age. I have used OS film, Ultra film, and Polymicro film. I think any Mylar will work however, due to its fragile nature, I have not tried Y2K or Y2k2. If you have any questions feel free to contact me at Lasray@gmail.com. Happy Dyeing and High Times,

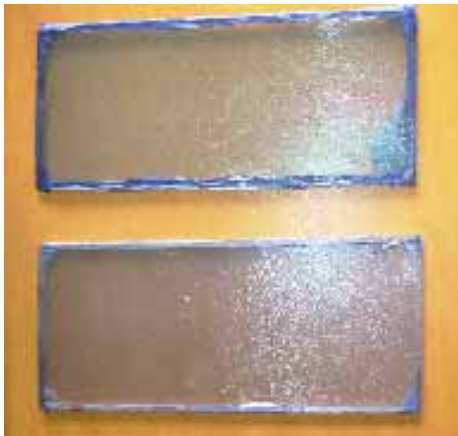
~Nick Ray~



A covered MiniStick



Rit Dye, available from Walmart, Hobby Lobby, grocery stores etc.



The top frame is OS film and the bottom is Polymicro film

All colors seem to have good results, the darker ones tend to take less dye for desired results.

LPP – Brett Sanborn

[USIC 2006 – 2nd place – 14:34]

After about two years of mediocre Limited Pennyplane times, and having no particular design work well for me, I set out for a new one. Following Steven Richman's Category IV limited Pennyplane record in 2004, I decided to try his design. Having worked out a few problems with props in my early Pennyplanes, this model flew quite nicely once I got it trimmed. It should also be noted that this plane is not Category IV specific—"The Funk" is a constant performer in almost every ceiling height. It won the Kent State contest in 2005, Flint Contest in 2006, and is steadily improving in category I.

The huge tip plates were a little disconcerting at first, but they grew on me. The design of the plane is straight forward, with a maxed out wing and stab and large tip plates. This feature is very similar to the Science Olympiad models many of the people from my age group used to fly. I fly this model with a lot of flare, in fact, on launch my fellow competitors rib me about the plane's shakiness. My prop is not much different than the one shown in the plan, only a bit more area for a lower ceiling than a high category IV. A good flaring prop is essential to success in Limited Pennyplane.

The only thing that I changed from Richman's design is the use of carbon fiber wingposts. I am not sure that they add any sort of efficiency, but it definitely looks cooler.



**Jones Design
Balsa
Stripper**

Now Available

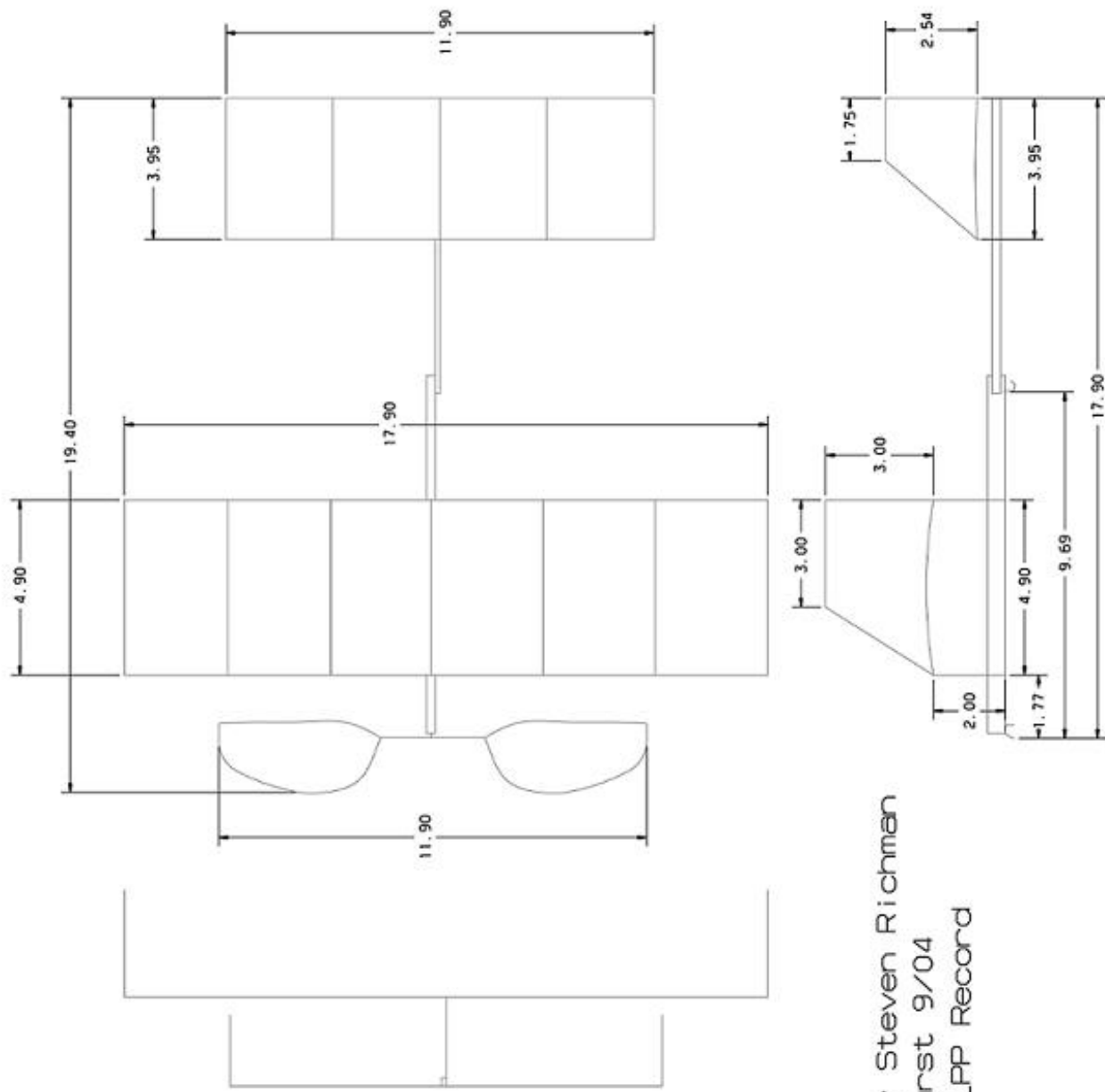
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The Funk- by Steven Richman
 18:57 Lakehurst 9/04
 AMA Cat IV LPP Record

KIBBIE DOME ANNUAL MOSCOW, IDAHO, JULY 7-11, 2006

In the weeks prior to the competition, I watched the weather reports in the Moscow area, and with trepidation, saw the highs nearing the 100's. It makes it a little uncomfortable inside the dome, although we usually acclimate in a day or so after being inside the whole day. Imagine my surprise when nearing the Moscow area, we saw mixed clouds and sunshine. It continued that way for each day, and we had reports of thunder and hail in the vicinity, but not at Moscow. In fact, the evening before the last day of competition, we looked out the motel window, and watched as huge, dark clouds gathered over the city. However, by morning it had cleared up, and the skies were clear. The conditions in the dome varied from day to day, and we noted that there were periods where it appeared there was an inversion layer that kept the models from going any higher. Even increasing the rubber size didn't help - we just couldn't push on through. However, eventually, the air cleared, we began to get normal flights. There were also times when the conditions were quite calm, with no drift and no disturbance. The flyers, mostly cautious about the ceiling tiles, did put some over the tiles. The dome crew were very cooperative, and made a number of trips to the roof to attempt to retrieve the models. They were mostly successful, but a few remained and were lost.

The attendance was down this year from last years record amount, but there was still a lot of flying and good visits with each other. At this point I would like to present a few vignettes that made this meeting somewhat special. A young man, Chris Dougherty, from Vancouver, British Columbia, came down with his father. What made this special was their method of getting to the competition. Chris's father, owns a Triumph motorcycle, and they decided to ride that motorcycle to Moscow. In the saddlebags they put their clothes and other personal items. Chris put all his models and equipment into a backpack, and sat behind his father the whole trip. They didn't have a sidecar or trailer, just the two of them on the motorcycle. They made the trip in 8 hours. There's more to the story. There are no indoor modelers in Vancouver, so all Chris had for information were model magazines and periodicals. He designed his own models, and built them himself. Chris is about 13 or 14 years old. He built an A-ROG that had a built-up tailboom similar to Bud Tenny's on his duration models. The wood and crossbracing were less than 1/64th square, and very delicate. His father owns a shop with a 25 foot ceiling, and that is where he practices. At this contest, he recorded a time of 13:55, which is quite respectable. His goal was to break 14 minutes, and he tried hard to make that goal. He had several other models that were quite innovative, and I believe we will hear more of Chris in the future. Tim Chang was also there from the California Bay area, and as a senior flyer, made a great showing in many events. He has excellent modeling skills, and is a determined flyer. I realized just how determined he was when he came by my table after I had a good flight in Limited Pennyplane, and cheerily announced, 'I'm coming after you!' He was only short by 16 seconds. Tim is the product of a good mentoring program headed by Lou Young. Nicholas Huong also came with his father from Boise, Idaho. He is also a senior, and got started in modeling on his own. He had some difficulties for a while, but with some help from Ed Berray, got his Limited Pennyplane flying pretty well. We all gave a silent cheer when his model climbed almost to the ceiling. He is a very nice young man, with a gracious father. We all missed the group from the midwest that flies the A-6 event so well. It didn't seem right that there wasn't a ten minute flight from Gary Hodson or Tem Johnson. Also Emil Schutzel putting up a five minute flight in Bostonian and a 12 minute Manhattan. This year Andrew included in the events the 35cm class. The rules are easy - wingspan of 35cm and anything else goes. There were four entries this year, but I suspect it will become a popular event if the rules are not changed.

The Flying Aces group really put on a show this year. They had quite a number of tables, and displayed over a hundred models. They did a lot of flying this year, and some of the models I observed were museum class if I am any judge of building abilities.

During the competition, there were some models that flew behind the banners that hang from the ceiling, and landed on the catwalks high above the floor of the dome. We have to give credit to the dome crew, as they rescued models without damaging them. We took up an offering for them at the conclusion of the competition.

Just cannot end this without mentioning Wally Millers model box. He flies up to Spokane from California, and his box fits into the luggage compartment above the seats. He somehow manages to get 12 models into that box, *plus* extra props, stabs and rudders. Included in this box is an Intermediate stick and Pennyplane! Incredible!

I will try to give you highlights and insights on the events that were flown during this contest. Early in the competition John Lenderman, flying his Thrush, posted a time of 14:46. He didn't think that time would hold up, so the model was kept ready in the stand. There were 10 entries in the event, and all were flying well. Late in the contest Mike Palrang had a flight of 14:35, and that took second, with Tim Chang third with 14:30. In quite a few events, the times were very close. In Ministick, the real competition began on the fourth day of the meet. Phil Alvarez had been flying steadily with a very nice model, and had a 11:51 flight posted. John Lenderman, whose model had flown over the tiles and been recovered, piled in the turns and after a scary flight bouncing off the tiles, and over the wires, landed with his personal best of 12:16. While he was still celebrating, someone said to look at another Mini just landing. It was Mark Bennett with an outstanding flight of 12:25, which was the winner. Mark just goes about his business quietly, but shows great ability. In the 1.2 EZB event, Mr. EZB himself posted a great flight of 21:16 to win the event. He really knows how to make them fly. The A-6 event was really a close one, with the winner, John Lenderman at 8:04, second place Ed Berray at 8:02, and third place Michael Altig at 8:00. These three fly at the Willamette Model club contests in Albany, Oregon. As you can see, there is close competition at those contests also. In the regular EZB event, we were really glad to see our host, Andrew Tagliafico, finally get that great flight he deserves. For many years Andrew has had excellent models, but somehow, he was unable to get the models to reach their potential. This time he did it with a very good flight of 28:43, besting another good EZB flyer, Mike Palrang at 28:18. In third was Ed Berray at 23:39, with a nicely built model. Mark Bennett showed he knows about Pennyplanes when he posted a 16:28 with his biplane. Bill Leppard, flying a monoplane with a large red prop, was close behind at 16:23, and John Lenderman, also with a monoplane Thrush, was third with a flight of 15:42. In the Science Olympiad Mass Launch, Andrew Tagliafico and Chris Borland continued their battle, with Andrew topping Chris with his 5:20 to Chris's 4:57. In third was Rebekah Altig, a great young flyer.

In Standard Catapult glider, Darryl Stevens just barely topped Bruce Kimball with his 3:04 to 3:03.2. Wally Miller and Andrew Tagliafico battled it out in ,A-ROG, or BABY ROG. Each took turns posting higher times, until finally Wally had a terrific 19:29 to top Andrew at 18:57. Those models really performed. The 35cm event showed we had a lot to learn after Bill Leppard had a flight of 25:46. Andrew, with a brand new model had a 20:23, and Cohn Raymond-Jones did a nice 20:12. Bill Leppard, with a very good model, and good flying, won Hand Launched Stick with an excellent flight of 29:37. The rest of the scores will be posted below.

We again thank Andrew for arranging this event, and for all the hard work involved. He is planning another 5 day event for next year. Make your plans!

Here are the complete results.

Limited Pennyplane (10)			Mini-Stick (8)			1.2 EZB (7)		
1	John Lenderman	14:46	1	Mark Bennett	12:25	1	Wally Miller	21:16
2	Mike Palrang	14:35	2	John Lenderman	12:16	2	John Lenderman	21:09
3	Tim Chang (Sr.)	14:30	3	Phil Alvirez	11:51	3	Andrew Tagliafico	19:55
A-6 (7)			EZB (6)			Pennyplane (6)		
1	John Lenderman	8:04	1	Andrew Tagliafico	28:43	1	Mark Bennett	16:28
2	Ed Berray	8:02	2	Mike Palrang	28:18	2	Bill Leppard	16:23
3	Michael Altig	8:00	3	Ed Berray	23:39	3	John Lenderman	15:42
S.O. Mass Launch (5)			Std. Catapult Glider (5)			Baby ROG (5)		
1	Andrew Tagliafico	5:20	1	Darryl Stevens	3:04	1	Wally Miller	19:29
2	Chris Borland	4:57	2	Bruce Kimball	3:03	2	Andrew Tagliafico	18:57
3	Rebekah Altig	4:20	3	Ed Berray	2:05	3	Ed Berray	17:30
35cm (4)			AMA Hand Launched Stick (4)			F1D Open (3)		
1	Bill Leppard	25:46	1	Bill Leppard	29:37	1	Mark Bennett	32:37
2	Andrew Tagliafico	20:23	2	Mark Bennett	25:03	2	Steve Brown	29:42
3	Cohn Raymond-Jones	20:12	3	Herb Rollins	21:36	3	Colin Raymond-Jones	25:36
Bostonian (3)			Intermediate Stick (3)			Unlimited Catapult Glider		
1	Mike Palrang	4:23	1	Bill Leppard	32:38	1	Darryl Stevens	3:01
2	Lou Young	3:37	2	Mike Palrang	32:06	2	Bruce Kimball	2:28
3	John Lenderman	2:32	3	Tim Chang (Sr.)	21:22	3	Herb Robbins	1:43
S.O. Senior (3)			Hand Launched Glider (2)			F1D Junior (1)		
1	Andrew Tagliafico	5:36	1	Tim Chang (Sr.)	1:28	1	Tim Chang (Jr.)	26:53
2	Cezar Banks	5:27	2	Ed Berray	1:18			
3	Chris Borland	5:00						
Ornithopter (1)			S.O. Junior (1)					
1	Herb Robbins	5:11	1	Rebekah Altig	4:32			

Reported by John Lenderman

Kibbie Dome Album



Mike Palrang launching his EZB



Some of the FAC group



Chris Borland with his LPP



Ed Berray retrieving EZB from tennis court net



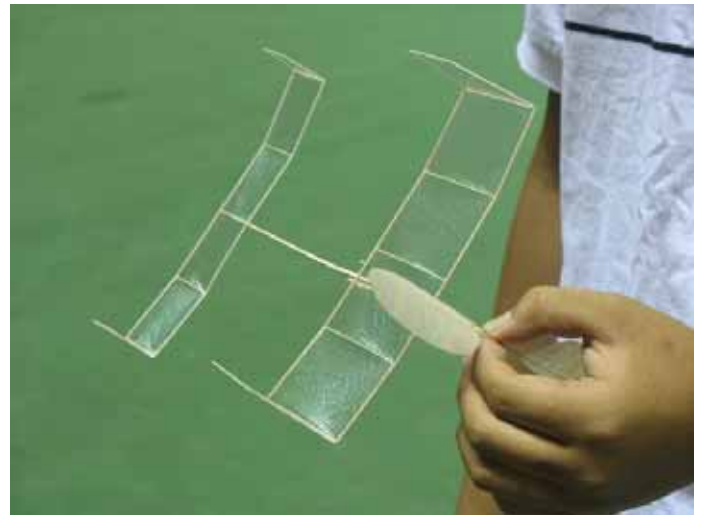
Phil Alveraz telling Mike Palrang how to do it



Those pesky tiles - Chris Borland's F1L



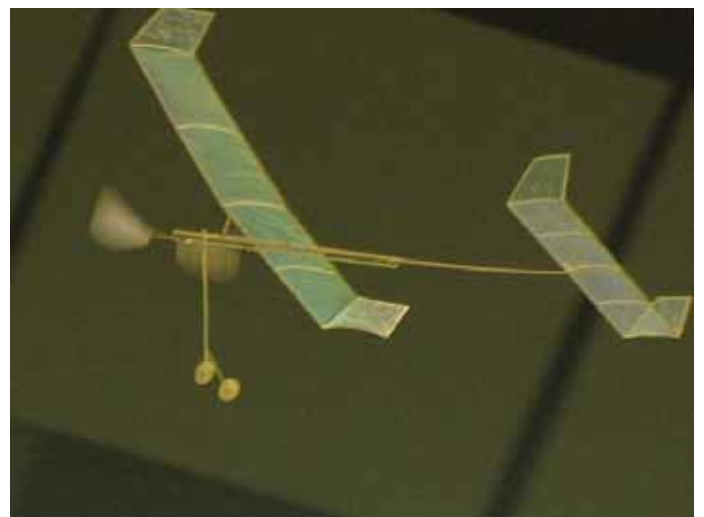
Colin Raymond-Jones from Ontario



Tim Chang's beautiful mini stick



Chuck Dorsett and John Lenderman telling stories



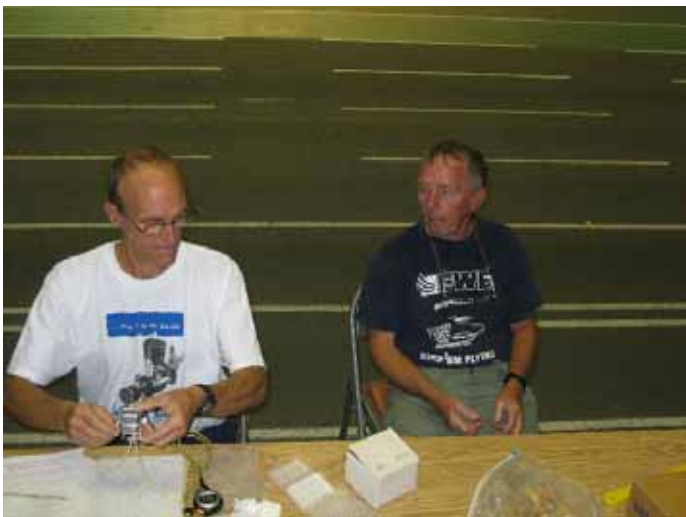
An A-ROG



Steve Brown - F1D program chairman



Of course - "The Place"



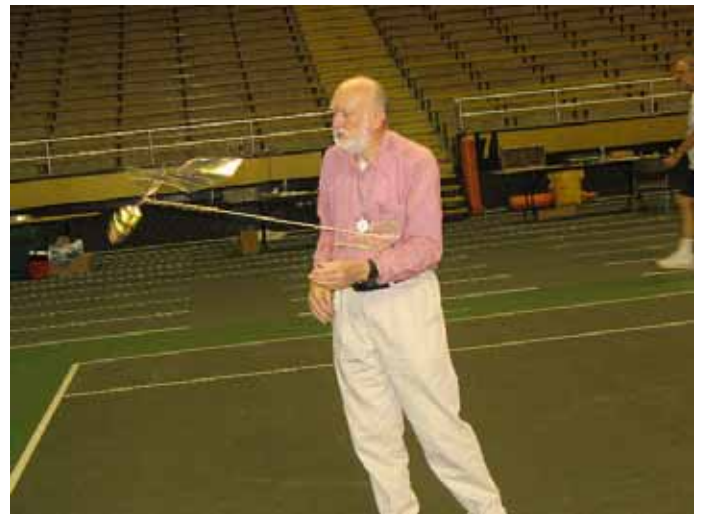
Mike Palrang cutting rubber with Herb Robbins supervising



Andrew Tagliafico with A-ROG - Contest Director



At 83, John Lenderman is still the one to beat



Cezar Banks - business as usual

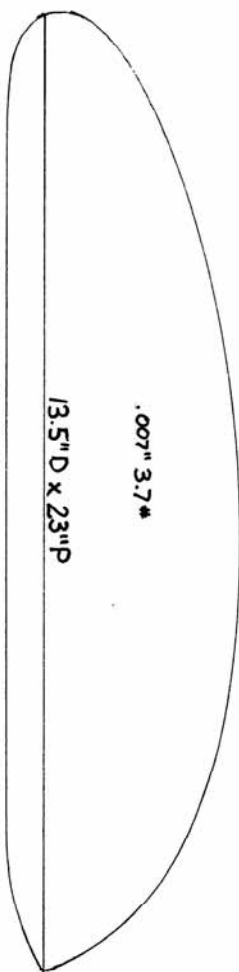
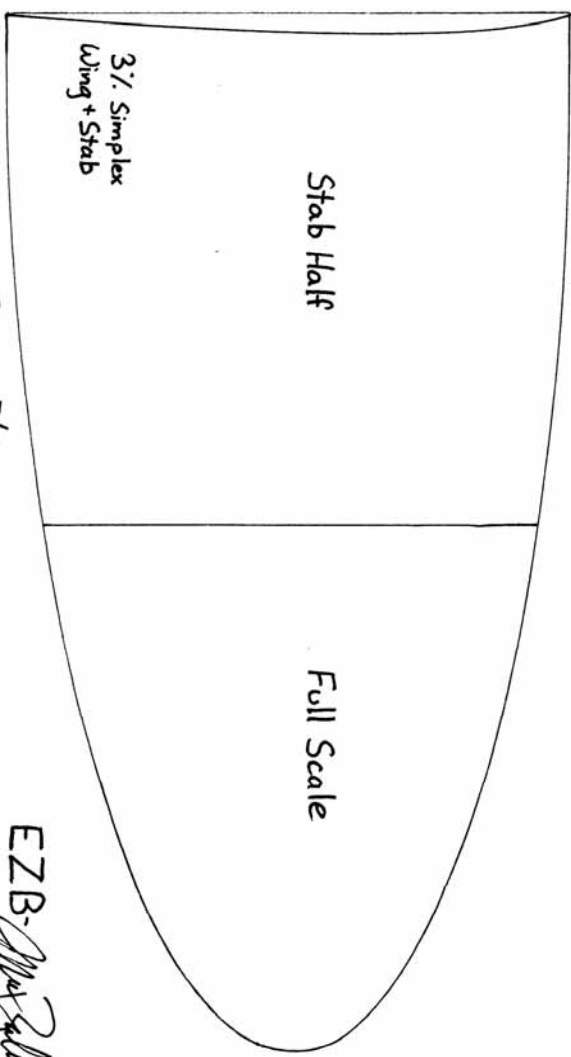
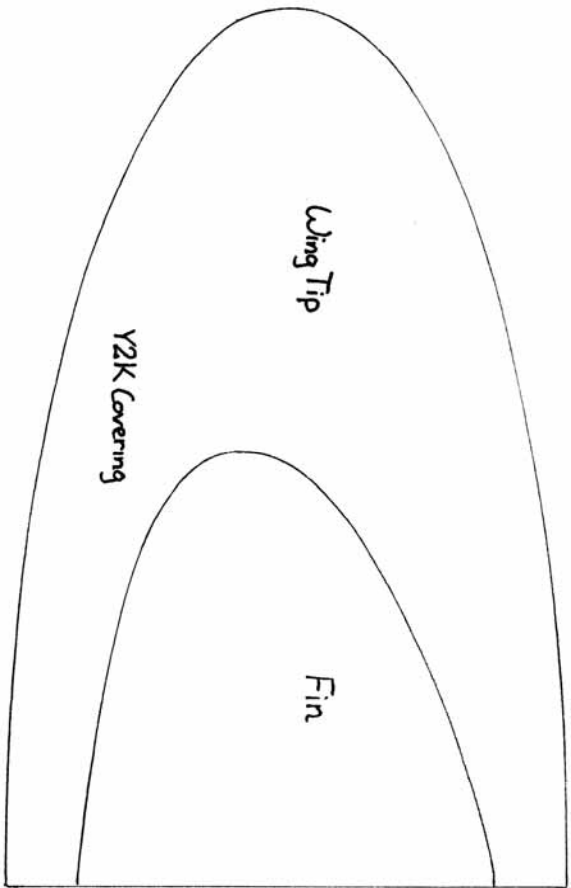


Tim Chang with F1D



Mark Bennett smiling! Everything went well!

Can't get enough of Indoor News And Views? Then get the INAV Archive CD. This CD includes over 250 complete issues of INAV along with a custom viewer program that allows you to print all the issues, articles, and plans. Order your Archive CD today by sending US\$45.00 plus shipping (USA US\$3.00 all others US\$5.00) to Tim Goldstein at the above address. Proceeds from the Archive CD go to support Junior indoor flying.



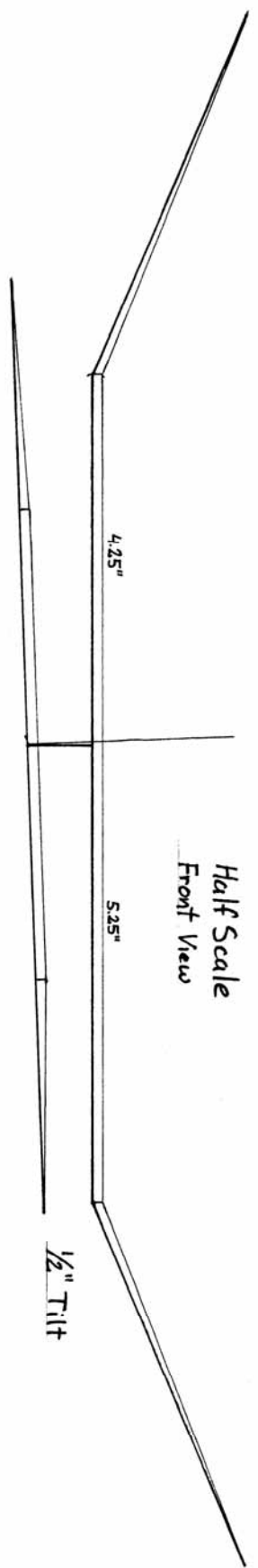
Power: 7/97 10.6" loop, 420mg
2100 Launch Turns
150 Remaining

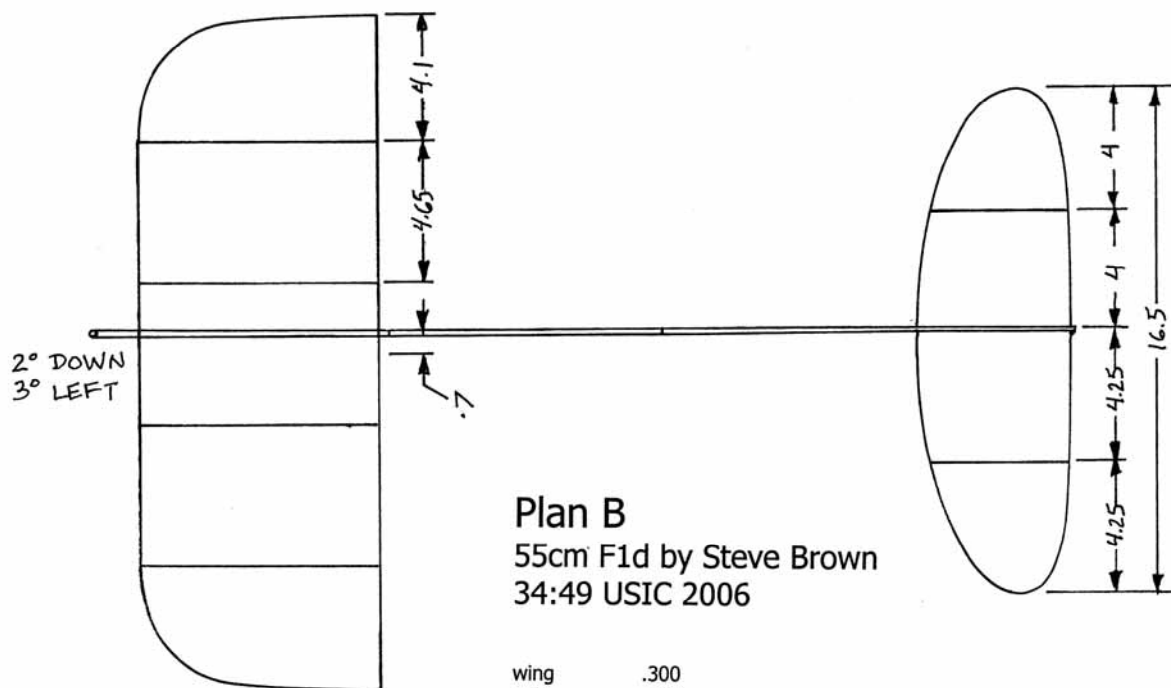
EZB-
2nd Place USIC 2006 - 27:58
Lakehurst Best - 31:17

Weights
Fuse: 231mg
Wing: 106mg
Prop: 98mg



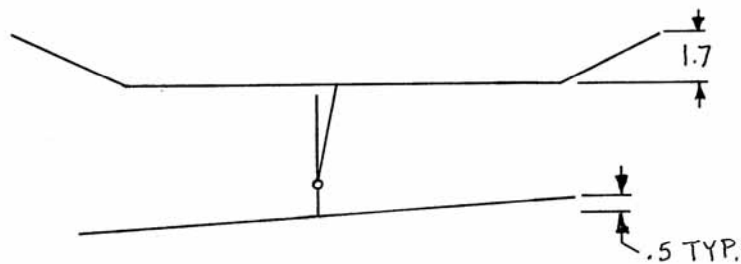
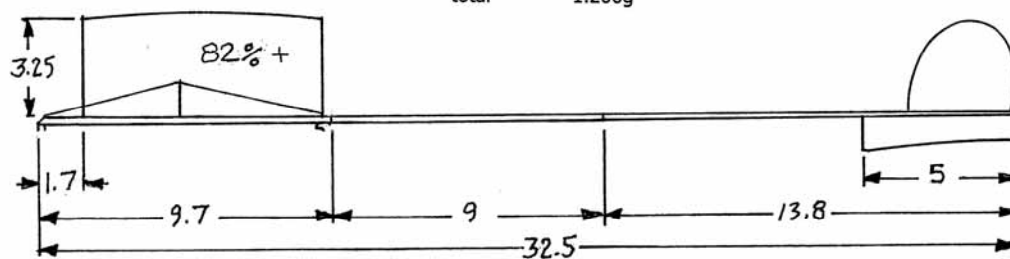
0" Down 2' Left 7.5" MS



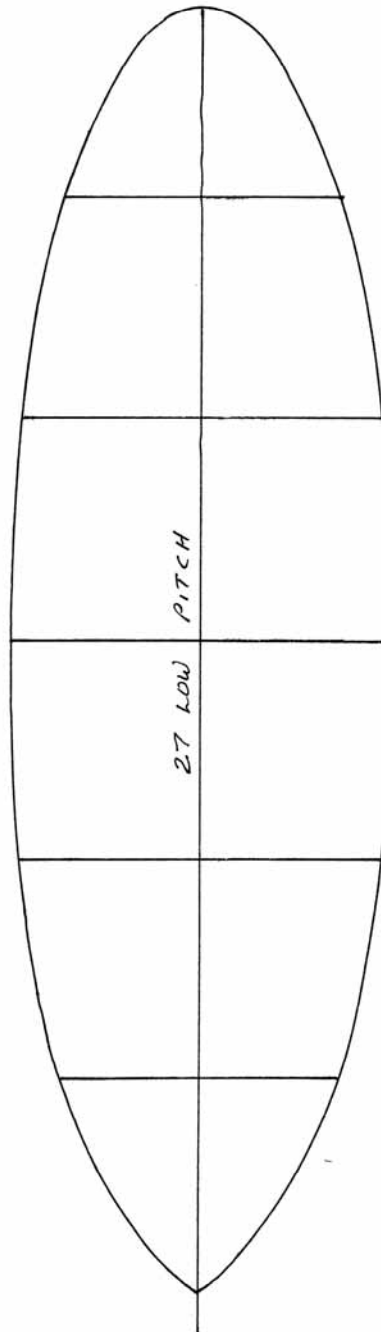


Plan B
55cm F1d by Steve Brown
34:49 USIC 2006

wing	.300
stab	.109
stick & stub	.350
boom & fin	.148
prop	.260
ballast	.033
total	1.200g

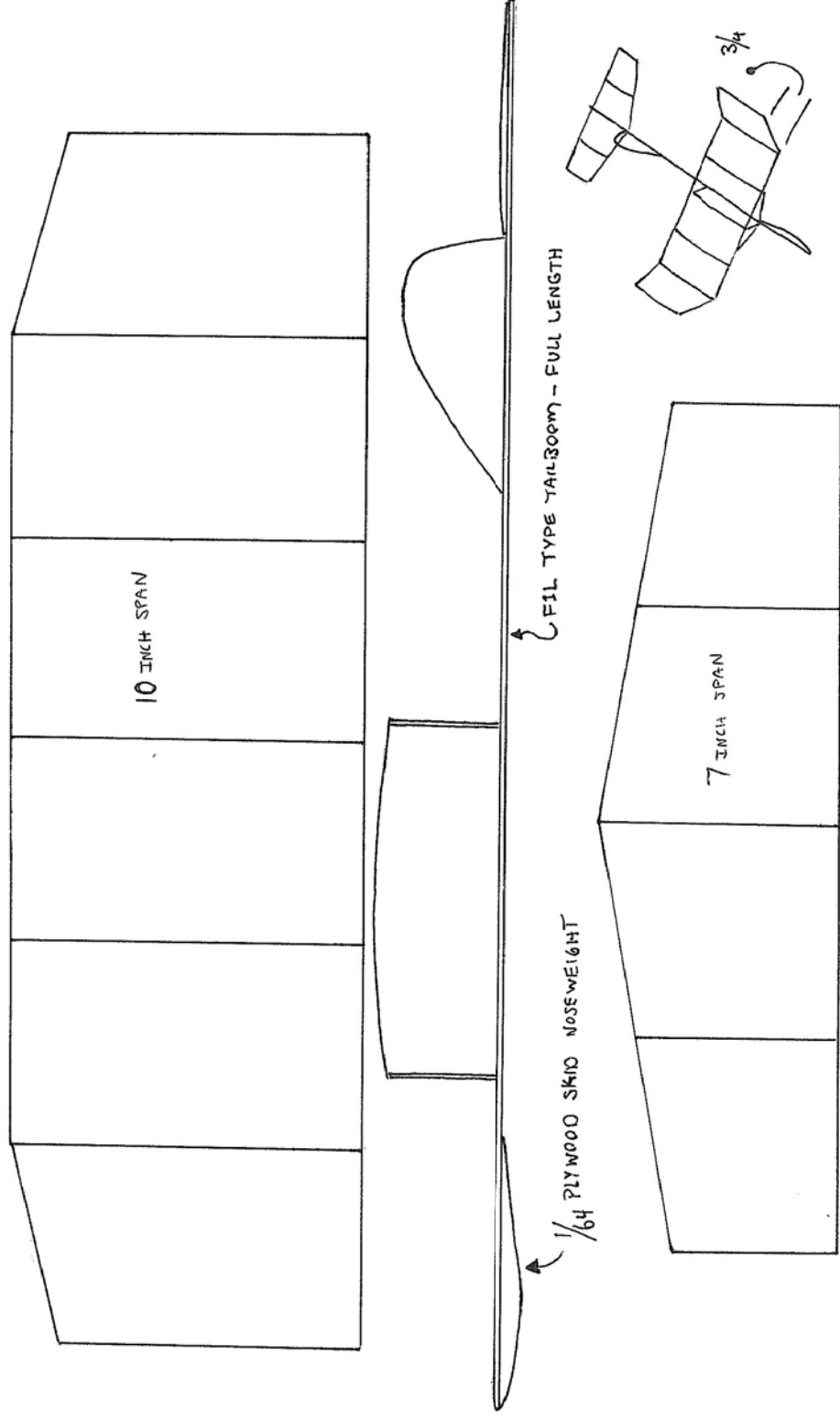


<i>stick</i>	
tube	.013 4.3lb .250 i.d. (2) .003 boron, 4 & 8 o'clock
webs	.022 4.1lb
cap	.013 4.3lb
post	.045 X .045 to .032 X .032 6.0lb
bracing wire	.001 tungsten
bearing	Harlan F1d
hook	.013 music wire
posts	.035 X .045, fattened to .035 X .060 at top (3) .003 boron, both sides & front
<i>straight boom</i>	
tube	.009 .235 i.d. 4.2lb (2) .003 boron, 12 & 6 o'clock
<i>tapered boom</i>	
tube	.009 .217 i.d. to .110 i.d. 4.0lb (2) .003 boron, 12 & 6 o'clock
posts	.035 X .055 6lb
<i>fin</i>	
outline	.040 X .024 4.5lb
covering	Y2K
<i>wing</i>	
spars	.036 X .046 5.5lb .003 boron top and bottom
compression ribs	.030 X .050 5.5lb
middle ribs	.030 X .040 5.2lb
tips	.030 X .043 5.2lb
tubes	.035 X .060 i.d. X .4
airfoil	30" radius arc
covering	Y2K
<i>stab</i>	
spars	.028 X .058 to .024 X .030 5.3lb
ribs	.025 X .040 5.0 lb
tubes	.035 X .060 i.d. X .3
airfoil	26" radius arc
covering	Y2K
<i>prop</i>	
spars	.068 X .078 to .032 X .032 5.4lb
spar joiner	.068 X .10 X 1.625 6.5lb
bearings	.004 aluminum
screw arm	basswood
screws	00-90 nylon X .125
shaft	.013 music wire
hinges	Monokote
spar driver pins	.007 music wire
driver	.010 X .040 X .4 beryllium copper
spring	.008 music wire
outline	.024 X .025 4.8lb
ribs	.024 X .025 4.5lb
airfoil	12" radius arc
covering	Y2K



Rob Romash – “Skidmark” Balloon Launched Glider

10" SPAN BLG



...as far as construction it would be typical EZB/FIL type with a total weight of 1/2 gram, covering was polymicro. Struts are only on the front spars to the wing post, this helps to keep the wing from tucking. Best time was 3:31 from about 95ft.

Ray Harlan – Race to the Roof

RACE TO THE ROOF

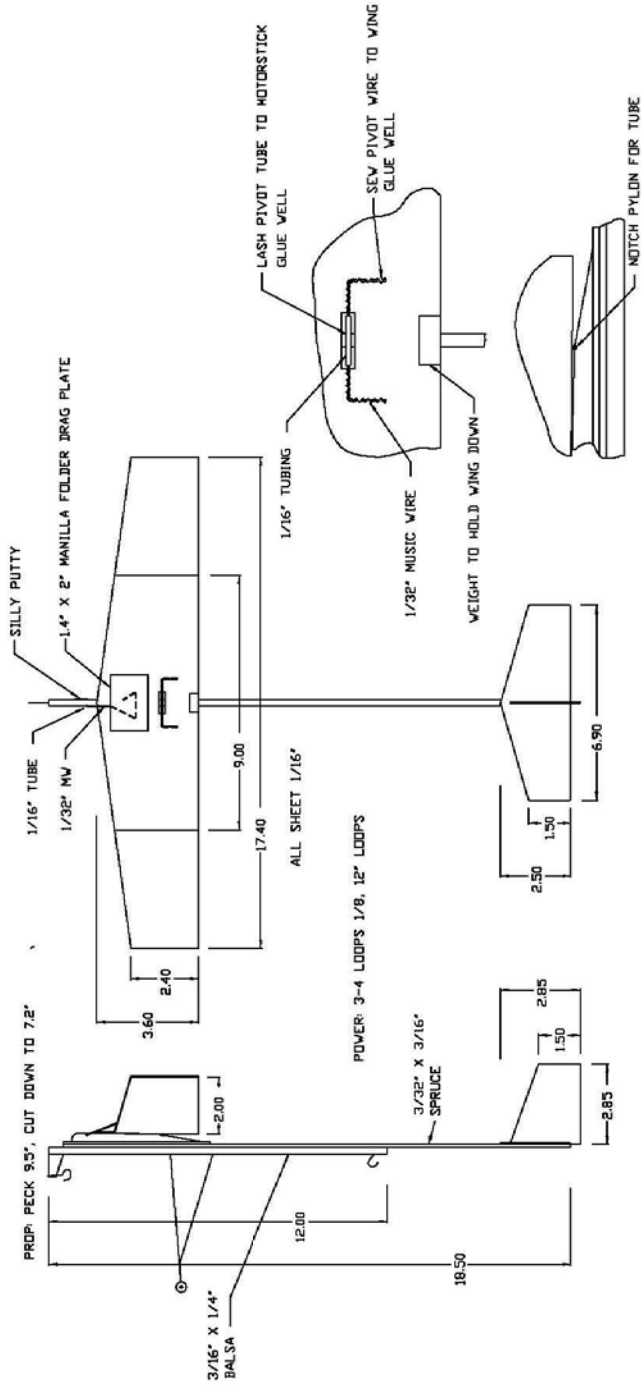
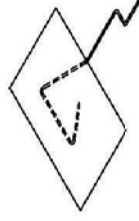
BY
RAY HARLAN

1ST USIC 2004, 2005, 2006

MODEL IS JASCO FLASH X-18
MODIFIED FOR RACE TO THE ROOF

HOW IT WORKS

THE DRAG PLATE IS SET FORWARD FOR LAUNCH.
THE WING IS ANGLED UP TO ITS LIMIT.
SILLY PUTTY SLOWS THE PLATE DOWN ON TAKEOFF.
IF EVERYTHING IS RIGHT, THE MODEL DOES A
QUARTER LOOP AND THEN STRAIGHTENS OUT FOR
A FAST CLIMB TO THE ROOF.



XIV Dorcol Cup - 2006 - Results

(Unofficial)

At 14. Dorcol cup, an international indoor model cup in F1D for seniors and juniors, held in Belgrade-Serbia, on 19.-20. August 2006., in the Belgrade fair halle 3. (height 22.5 meter), on 35-36 degre Celsius, was achieved results as follows:

SENIORS

Rang	Name	Country	1. best flight	2. best flight	Total
1	Lutz Schramm	GER	<u>34'47"</u>	33'38"	68'25"
2	Dezso Orsovai	HUN	33'44"	32'02"	65'46"
3	Ivan Treger	SK	32'41"	32'33"	65'14"
4	Andras Ree	HUN	31'12"	30'51"	62'03"
5	Slobodan Midich	SER	<u>30'05"</u>	30'03"	60'08"
6	Mikita Kaplan	CZ	29'35"	28'41"	58'16"
7	Klara Kaplanova	CZ	29'41"	28'26"	58'14"
8	Gyula Simon	HUN	29'31"	27'27"	56'58"
9	Zoltan Sukozd	HUN	27'39"	27'18"	54'57"
10	Jozef Kubes	CZ	27'45"	26'01"	53'46"
11	Oton Velunsek	SLO	25'01"	24'34"	49'35"
12	Vinko Marhl	SLO	22'26"	20'49"	43'15"
13	Vojislav Stojkovic	SER	21'09"	20'08"	41'17"
14	Istok Zagar	SLO	20'34"	18'10"	38'44"

JUNIORS

Rang	Name	Cuntry	1. best flight	2. best flight	Total
1	Gabriela Kaplanova	CZ	23'48"	23'03"	46'51"
2	David Sanda	CZ	23'58"	21'34"	45'32"
3	Robert Horak	CZ	18'06"	16'21"	34'27"

Lutz Schramm's 1. best flight is new world record F1D, Cat.3.

Slobodan Midich's 1. best flight is new Serbian record F1D.

Competition was very hot and very succesful, and the heighes nivo of organization was achieved from our model club "Modelar" - Belgrade, with Vojislav Stojkovich at the head. Excelent !

Novi Sad, 21.August 2006.

Slobodan Midich, dipl. ing.



Reg Parham

Sadly, Reg Parham SMAE Fellow passed away in early July.

Reg was a truly great aeromodeller and a lovely man.

He was in the 1939 British Wakefield Team that competed in the USA, when Dick Korda made his outstanding flights.

We all knew him as the Father of British microfilm indoor duration flying, and he was my inspiration as an indoor model flyer, and was the first person I ever saw fly an incredibly light and fragile microfilm covered indoor model at the Kodak Hall in Harrow, London, in the late 1940's

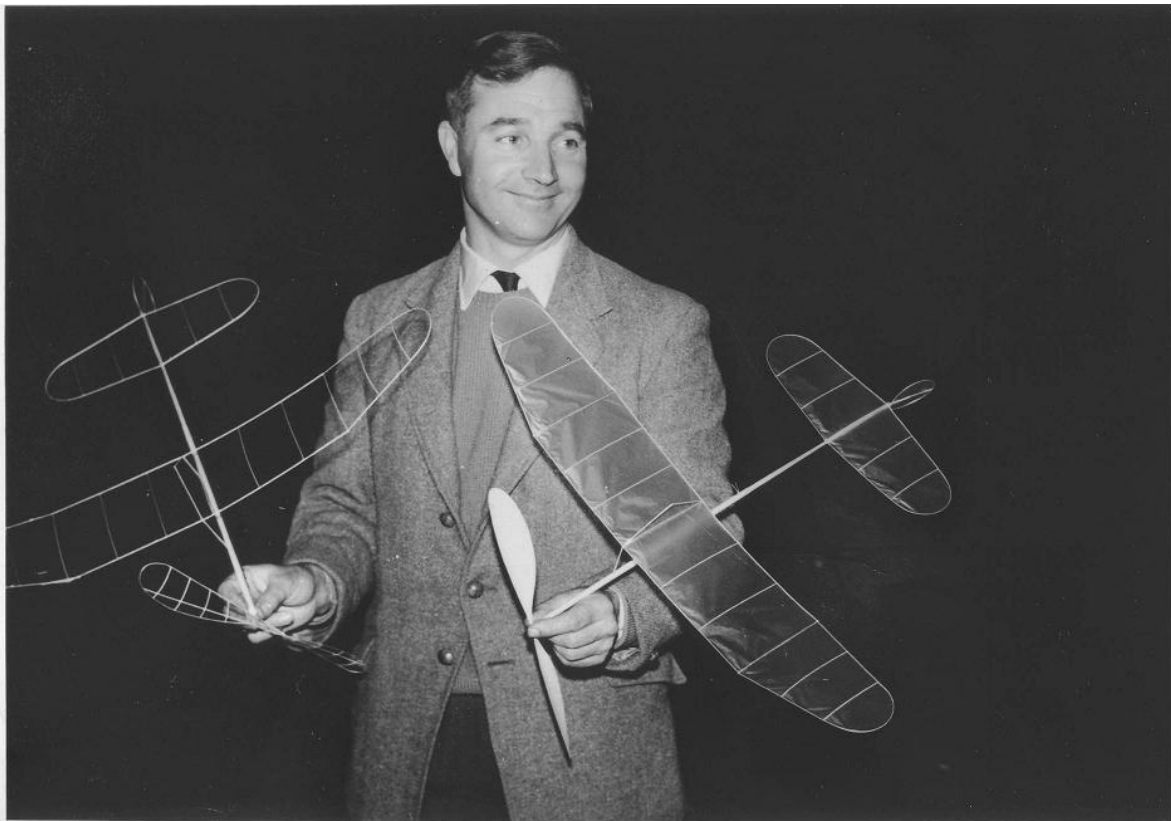
Many modellers here will recall his great lectures at the Model Engineer exhibitions, and other venues, where he flew 20 to 30 original or faithful copies of historic indoor designs from all over the world.

His own indoor designs were published in all the aeromodelling magazines, and in several Frank Zaic yearbooks. Today, his Wakefield and open rubber designs, are built and flown in Vintage rubber contests all over the world.

He was in the British F1D Team at Lakehurst, New Jersey in 1974 and also, at Johnson City, Tennessee in 1988.

Reg will be greatly missed as a friend and mentor.

Laurie Barr.



Super Spectacular Indoor Blowout

Lakehurst, NJ

July 1st – 4th, 2006

When I got to the hanger early Saturday morning the hanger doors were open about forty feet and were not scheduled to be closed until around 2:30PM. I talked to the person in charge and he said that they should be able to close the doors before the scheduled time. The guys started to arrive after ten o'clock and by twelve noon the doors were closed and everyone settled down to do some serious flying. There was drift, and it depended on where the models were launched that dictated what end and side of the building they would go toward. I did find a place near the RC flier's staging area that kept the model centered until it reached a hundred feet. Then it would start toward the door, and drift to the left and wind up over the carrier deck. Finally, it would have to be steered off of the deck at the end of the flight. The RC flier's were out of the building by early afternoon.

John Kagan was there to establish a World record with his Hand Launched Stick, and after a number of good quarter motor flights, his model was ready for a record attempt. On the first flight, the model was launched toward the raised carrier deck, but was not able to clear the top guard rail of the deck and folded the wing. Besides broken wing spars, the thrust bearing was damaged and some of the wing bracing wire was broken. It looked like a monumental task to get the model fixed, but John had the whole thing back together in an amazingly short time. On another attempt, the wing folded while trying to steer the model and more repairs were needed. On Sunday, he experienced more troubles and his chance for a record was again cut short late in the day. A violent thunder storm ended the flying session around six thirty because of low light conditions. Before the lights went out, the ceiling was pitch black. It looks like there is renewed interest in these huge models. Tony D'Alessandro and Tom Iacobellis had one and Max Zaluska was in the process of building one. They are spectacular to watch in flight, but a challenge to keep together.

Eleven contestants flew in the contest and Jeff Hood had a personal best with his EZB and did 26+ with his first F1D.

Larry Coslick

Results

Limited Pennyplane			Pennyplane			F1L		
1	Tom Iacobellis	15:59	1	Tom Iacobellis	15:58	1	Larry Coslick	23:28 - 25:47 *
2	Max Zaluska	15:31	2	Jeff Hood	13:34	2	Doug Schaffer	20:40 - 20:42
3	Brett Sanborn	14:27		Joe Krush	12:54			
4	Jeff Hood	12:58						
Ministick			EZB (6)			ROG Stick		
1	Brett Sanborn	13:22	1	Max Zaluska	28:02	1	Larry Coslick	22:49
2	Doug Schaffer	12:07	2	Jeff Hood	23:10			
3	Joe Krush	8:36						
Helicopter			F1D					
1	Doug Schaffer	9:32	1	Max Zaluska	29:01 - 31:36			
			2	Jeff Hood	26+			

* AMA Open Cat 1V record applied for

Lakehurst July 4th Weekend Pictures



The Lakehurst Regulars setting up



Larry Coslick – CD for the event



Tom Iacabellis and John Kagan with HLS's



Max Z. and his Pennyplane



Tony D'Alessandro and his HLS



Brett and Doug drove in for the whole weekend



John with his World Record HLS, Safat (aka "the Moose")



Larry's F1L

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From The Editor's Desk

This issue marks a few changes with INAV. After years as editor, Tim Goldstein is handing over the reigns to focus on his online business, wood cutting, and hopefully he might get in a little flying too. I think everyone I have spoken with thinks Tim has done a great job, and I believe the whole indoor community owes him a debt of gratitude. Hopefully I'll be able to carry on his work and do right by this publication and its long history.

So who exactly am I? Well, most of you do not know me, and for pretty good reason. I don't hold any indoor records, haven't written any classic articles on building or flying indoor ships, and I generally have a pretty slim resume when it comes to indoor. What was Tim thinking? I'm not sure actually. As brief background, I got started in this hobby when I received my first Guillow's kit (16" Focke Wulf 190) at the age of 11. With a little supervision, I built it, and flew it. OK, I chucked it while the propeller was spinning. This turned into a long line of Guillows, and Easy Builts, peanuts (I still read my copy of Peanut Power! by Hannan often), eventually turning into a Carl Goldberg Gentle Lady, a couple of 1/2A Texaco old timers and a couple of sport type RC ships.

I was in my mid teens when I was flying RC, and girls (read – my rather unsuccessful attempts to spend time with girls) had started to cut into my hobby time. By the end of college, I think I added exactly one airplane to my fleet. Off to law school (and yes, lawyer jokes are fine in my book – they are generally funny 'cause they're true) and I was officially into a hobby sabbatical. Following law school, I took a job in DC with a big ol' law firm that has far too many lawyers under one roof. As I settled into being an "adult" I once again got interested in the hobby I grew up with, particularly with the emergence of park flyers and affordable micro electric gear.

Then about four years ago, a friend here in town took me to a DC Maxecuters fun-fly in the National Building Museum. We went to see the micro RC. Unbeknownst to me, the other half of the building is used for free flight during these fun-fly sessions. So, after watching all the micro guys fly/crash around for a while, I wandered over to the free flight side. Guys were flying peanuts, dimers, stuff that all looked familiar. I smiled, said to myself I need to build one of those for old times sake and was about to move on when someone put up an F1L. I almost fell over. There is no way that thing was flying so slowly, so gracefully. I was instantly hooked.

Fours year later, I am certainly not an expert, nor am I particularly competitive, but I still love building and flying these indoor ships. I started talking with Tim a few years ago, first – to buy a copy of Williams' book from him, then about supplies etc. Anyway, INAV needed a permanent editor, and I write and edit stuff for a living, so here we are.

Now, if you are still reading, I'm impressed, my story isn't exactly riveting. But, let's get down to the real issues. I really think Tim has done a great job, and I am going to largely stick with what he has been doing. However, there will be a couple of changes. First, while I want to keep this as a substantial newsletter, I am concerned with consistently getting four issues out a year. Accordingly, I am going to deviate from the current 40 page rule. INAV will still shoot to put out 40 pages every quarter, however, if the material isn't there but we still have 30 pages, I'm going to print the newsletter. From my unscientific survey, this appears to be a significant concern of the readership.

Second, I am trying to establish an editorial "board" to help manage/assist in putting this newsletter out. To be fair, there are a number of people who currently help make this happen, not the least of which are Carl Bakay, Bill Gowen, Nick Aikman, Bob Bailey and of course Tim (forgive me if I've missed anyone). I hope to expand the group who are actively involved and already have had a few brave souls agree to help, including Jeff Hood and Andy Mitas.

For the next couple of issues, we are looking for articles on F1L's and what I call the crazy events – ornithopter, autogiro and helicopter. Of course, we'll take anything that is relevant and of interest to our readers.

Best regards and good flying,
Tony Pavel, Editor paveltony@gmail.com

Two fine modelers have passed away since our last issue. Lt. Col. Bob Randolph of the USA, possibly one of the best indoor FAI flyers this country ever produced, and Ron Green of the UK, a world class competitor and friend to all in the European arena. We have tributes to both in this issue.

We also have the results the Midwest Champs Results from Champaign at the end of March, thanks to Bob Warmann.

This is a sort of one-design issue featuring the 35 Centimeter model. The rules are very simple – the wingspan must not exceed 35 centimeters. There are no restrictions on anything else. Tom Sova presents his model in this issue, which has set records at USIC in Johnson City and elsewhere. Slobdan Midic proposes dividing the class in two: 35 cm Paper (as it is now) and 35 cm Open, with just the span restriction. Bob Bailey of the UK has been very successful in this arena, and gives us the benefits of his advice and expertise.

Finally, Tapio Linkosalo of Finland flies both F1B outdoors and just about everything indoors. He has been testing 30 gram F1B motors over the years. He gives us his results for Tan II and Tan Super Sport in graphic form, which should be of interest to all. Multiply his numbers by 1.09 to get the US energy equivalent of foot-pounds/ pound.

- Carl Bakay

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Indoor News and Views is an open forum presenting ideas, opinions, model designs and techniques for the indoor community. Unless specifically stated, INAV does not offer any opinion as to the merit of published work, nor does it endorse any products or services advertised herein.

RON GREEN

Sadly, on March 17th, Ron Green, one of our top indoor duration flyers, passed away after a long struggle against cancer which had been diagnosed late in 2002. He always remained positive and determined in the face of a long struggle and here are three tributes to him from his indoor flying friends.

Bob Bailey.

I had known Ron since the late 1960's, when he was an enthusiastic member of the St Albans MAC, flying F1B and thermal soaring gliders with great skill. When I had just started flying indoor models, I described them to Ron and he was hooked. Ron's skill soon won him an F1D Team place for the World Championships at Cardington in 1976 and once again in 1978, when he was part of the Gold Medal winning British Team.

Ron came back to indoor flying in later years and he was on the British Teams again in 2002 and 2004. Both contests were held in the salt mine in Romania and the 2002 Championships were the first for the current rules F1D. The rate of climb of his models earned him the nickname 'Mr Concorde'!

Ron was always of a cheerful disposition and rarely if ever complained in the face of adversity. He was a great innovator and I shall always be indebted to him for the many clever ideas he fed in my direction. In particular, he became famed for the quality of the wood he cut for indoor models, which was as good as wood available anywhere in the world.

I always admired his vast range of engineering skills in lead and zinc roof working and plumbing, in heating and ventilation, which he taught to many students at St Albans College of Further Education. He had an unerring eye for the good and the bad pupils!

Our deepest sympathy goes to his wife Rose and family.

Geoffrey Lefever.

It is customary to say good things about a friend we have lost. I don't believe anyone could say anything other than good and warm things about Ron who sadly died recently. He was generous with his time and friendships and there are few of us who have not benefited from his unstinting help, encouragement and his boundless enthusiasm.

As an indoor flier Ron was intuitive and perhaps the most naturally gifted modeler among us in Great Britain. He was fiercely competitive but this was always tempered by good humour. He had an enviable contest record and a meteoric rise to fame in the mid 70's, gaining a Team place for the 1976 Cardington World Championships after flying F1D's for only five months. Two years later, Ron gained an F1D Team Gold medal.

After a break for a few years, Ron returned to indoor duration and in 2002 and 2004 he flew again in the World Champs in the Romanian salt mine. Apart from his flying skills Ron cut some of the very best indoor quality balsa.

As we are about to start another flying season, Cardington will not be the same without him and Ron will be greatly missed by his numerous friends.

Nick Aikman.

I have many happy memories of Ron, illustrating his dedication to indoor modeling and love of competition, his fine craftsmanship and exacting building skills and also, his practical and down to earth nature and willingness to help others who fly these most fragile and beautiful of all model aircraft.



Ron's indoor career lasted over thirty years and he represented Great Britain in a World Championships on four occasions. Over the years, he also flew many low ceiling indoor classes, control line, outdoor free flight and other model types with great success.

One abiding memory I have from the late 1970's sums up Ron's generous spirit. As a young indoor flyer, keen to discover more, my father and I were invited to Ron's house to talk about indoor models and were duly ushered upstairs to his inner sanctum in the loft.

There, surrounded on all sides by modeling paraphernalia, we spent two or three

hours talking shop, looking at Ron's jigs and templates, models and model boxes. We sat, surrounded by a huge mound of large balsa blocks of all shapes and sizes – fodder for his wood-cutting machine. Ron was an extremely clever engineer and had built his own precise device to cut indoor balsa down as thin as 0.006" thick.

That afternoon, Ron was completely free with his expert knowledge and know-how and when I finally left with many indoor puzzles solved and my enthusiasm re-doubled, I was clutching in one hand a stash of wafer thin balsa sheets and in the other, half a pound of the best rubber available – all freely given and for nothing.

All of the Cardington indoor regulars will miss Ron greatly and he will also be remembered with great affection and respect by other indoor and outdoor flyers in Great Britain and abroad. We are all much the poorer without him.

31.03.06.

Lt. Col. Bob Randolph

1923-2006

A true friend of indoor modeling, Bob Randolph died on February 2, 2006 after a five-month illness.

A 30-year veteran of the U.S. F1d Team Selection programs, Bob made the team five times and was team manager twice. He competed in World Championships in the U.S., England, Japan and Romania. Concentrating on Paper Stick, Cabin, F1d and Hand Launched Stick, he held 22 AMA records and four FAI World Records.

Bob organized an average of 20 indoor contests a year for more than 20 years. He gained access to many sites including Wingfoot Lake, Norton AFB, Edwards AFB, March AFB and Los Alamitos NAS. He was a career officer in the U.S. Air Force, seeing combat in World War II as a B-24 bomber pilot. After retirement in 1971 he flew competition sailplanes and earned an FAI Diamond badge.

Bob was well known to indoor flyers around the world and all who knew him will miss his enthusiasm and experience.

- Steve Brown



A Winning 35 Cm Design

By Tom Sova, Sylvania, Ohio

First Place Winner
USIC 2004, 2005



One of my favorite events is the 35 CM event. The rules are simple. The only restriction is that the wing span shall not exceed 35 cm. There are no restrictions on chord, model length, prop, covering, or rubber weight. These simple rules allow for a lot of experimentation in design.

My first 35 cm model was built for the 1995 USIC. This model was built to regain some building and modeling skills following a long layoff from modeling. I managed to win the event with a time of 19:11. Over the last couple of years this event has become more popular and the competition has become fierce.

The plane presented here was designed for the 2003 USIC and is my third in a series of designs. Times progressed from 19:11 to 25:47 for the second plane and are now around 29 minutes with a fixed pitch prop for this design. Bob Bailey is currently able to turn in times in the mid 30 minute range using a variable pitch prop in this event.

Construction is straight forward. I haven't been very concerned with weight. The model is quite robust at 445 mg. The prop is an enlarged version of Larry Loucka's winning A ROG prop and works well for me. If this is going to be your first 35 cm I suggest you start out with a lower pitch or slightly smaller diameter prop.

I hope this simple design will spark more interest in this simple, fun event.

35 CM

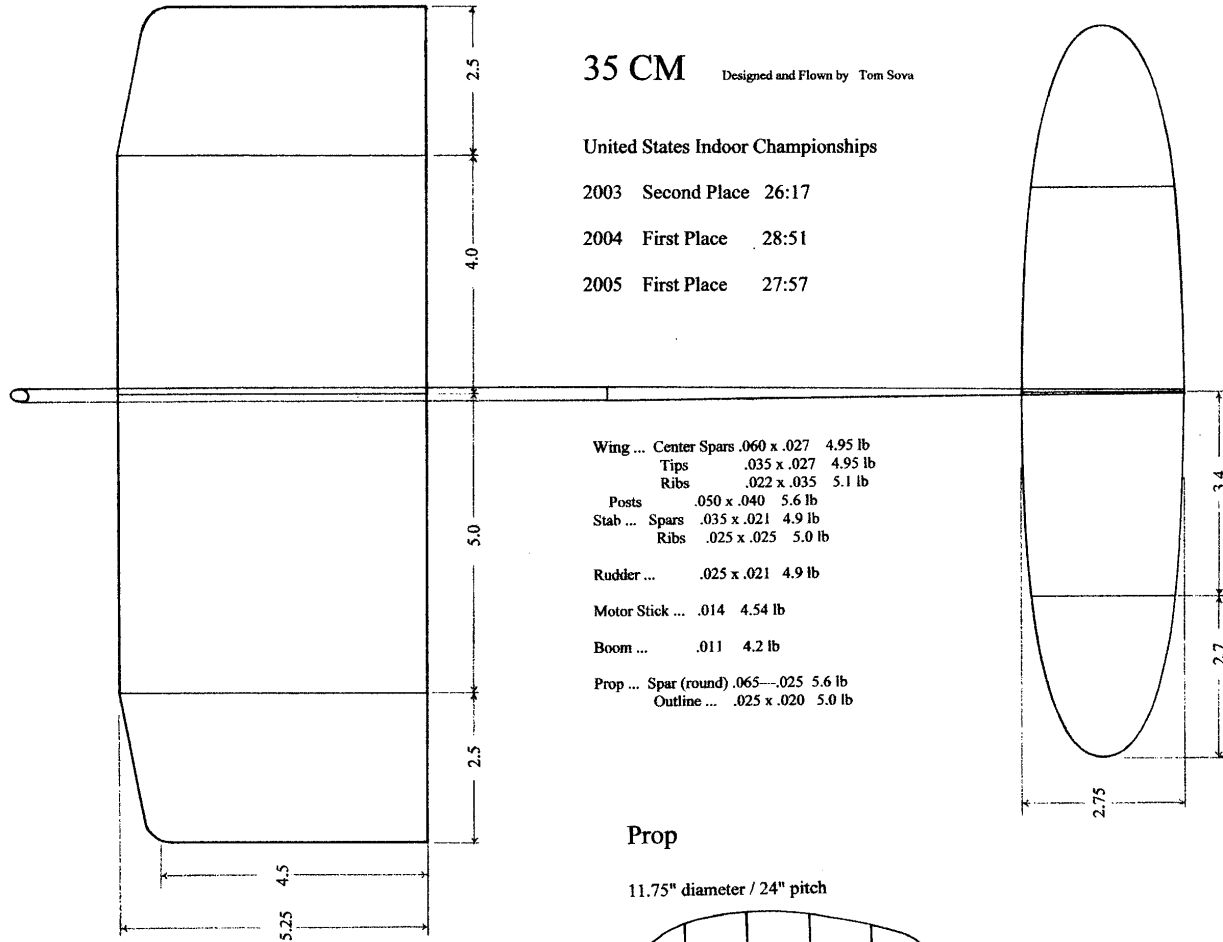
Designed and Flown by Tom Sova

United States Indoor Championships

2003 Second Place 26:17

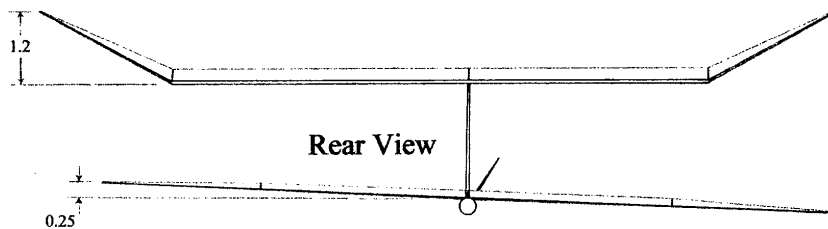
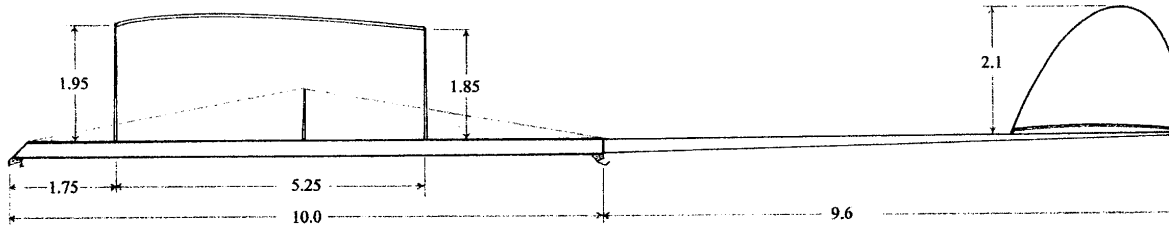
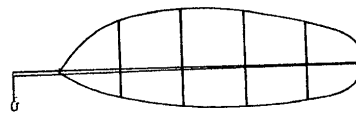
2004 First Place 28:51

2005 First Place 27:57



Prop

11.75" diameter / 24" pitch



Rear View

Weights (grams)

Wing.....0.100

Prop.....0.095

Rest.....0.250

Total.....0.445

35 CM MODELS

by Bob Bailey

I expect that you've all seen the plans, so I can offer some notes on construction and handling.

CONSTRUCTION

To build these models really light requires the most careful selection of wood for maximum stiffness for a given density. This selection process is probably more critical than for any other duration class that I have flown (F1L, F1D and F1M).

Selection Process

Much has been written on this subject and it has been the subject of some recent correspondence in the Indoor group. I use the Euler method to measure the Young's Modulus (amount of stiffness) which comprises measuring the buckling load for a sample of the wood. I cut the wood to sections about 3/8" by 3/16" or 1/4" depending on the sheet thickness, having done an overall test on the sheet to see if it's worth cutting up. No point in wasting valuable building time! I use a version of the Taylor – Hunt program which calculates density and Young's modulus E and I then compare the values with a graph produced by Joe Maxwell and published in his booklet on balsa wood (average Young's modulus vs density). This gives a quality factor (measured $E/av E$) for the density of the sample which I find to be more useful than the stiffness coefficient and simpler to interpret. I write the values on the piece of wood; it is effectively the test certificate.

Each piece is then sliced to half the original thickness to give two pieces for the price of one. To make a spar, for example, the sample is shaped to the section as seen from the front or back and then attached with thick cyano to a handling piece of 1/16" or 3/32" sheet. Spars can then be sliced off to the required thickness.

Use the best wood you can find!

Weight Control

This process must be rigorously adhered to at all times; if not, I know that the weight can creep up insidiously and before you know it, the total model weight has increased by 10%. It can happen with astonishing ease! Weigh all components eg a set of ribs, LE and TE spars, stick blank etc and write the values down! This is your reference data. I also note for spars and tips the Young's modulus and density of the wood; correction can then be made for problems such as excessive flexibility by eg finding a stiffer bit or if not possible, increasing the depth by eg 5%. Resistance to bending increases with the square of the depth so a 5% increase in thickness gives 10% increase in stiffness.

Stick and boom

Motor sticks and have given me problems of distortion eg going out of straight after joining up the seam, due to glue shrinkage and due to variation along the length of the piece of wood chosen. These variations seem not to be obvious on inspection of the sample. After seaming up, it may be beneficial to leave the stick on the mandrel for at least a week to allow the glue to age. I have had to discard numerous sticks for this reason. If you don't have any of these problems, either your wood is denser or your selection/choice is better than mine!

I make the prop bearings from 0.008" wire using a wire bending tool to form the pigtail at the back which faces forward. The wire bender consists of a tube with a piece of wire which overhangs the tube by about 0.040". The tube is slipped over the mandrel and the overhanging wire forces the wire to be bent round the mandrel as the assembly is rotated. When installing in the stick, ensure that there is plenty of support to prevent the stick from collapsing in between the front and back of the bearing. Possibly a thin piece of sheet to hold these apart is the

best bet; this piece also provides support for the web placed at the front of the bearing to carry the compression load. I have had problems with the usual piece of strip wood which bridges the gap. Incidentally, the above comments are worthy of note for current rules F1D carrying tightly wound motors where compression loads can be unexpectedly high.

Wing and Tail

I established spar sizes for the wing and tail by observing their behaviour in flight. If the spars do not deflect noticeably, they can be made lighter! I make the wing ribs Andrews style with more thickness in the middle than at the front and rear; this will reduce unwanted ballooning, particularly at launch. Ensure you have adequate camber (3% plus) for the wing to reduce flying speed.

Propeller

I have found that with a decently stiff and well built prop, my models will easily outclimb any site in which they will be flown (fixed pitch). My first record attempt at the Cargolifter hanger with a FP prop took the model to about 100m; it looked close to the roof. That place is big! Therefore VP props will give a big advantage everywhere else.

I recommend 5 1/2 lb wood for all hub components since lighter wood tends to squash out of shape. The shaft wire (0.009") is bent into a 'top hat' which fits into a slot in the 0.010" unidirectional carbon drive arm which has open slots for the drive pins. I have found that with the large angle changes required (20 deg) the pins will jam in holes in the drive arm. The shaft is attached to the arm with 24 hr Araldite (epoxy resin); this is the strongest and these joints have never failed.

Drills for these small holes are lengths of guitar string wire fixed into brass tube for mounting in a hand held minidrill. To sharpen the end, cut off a tiny length with the side cutters. It's that simple! The drills will give a perfect fit in soft drinks can material for the hub bearings. Clean off the lacquer or paint with emery, drill the hole, cut out with scissors and mount on a length of shaft wire. Degrease the bearings with thinners before attaching to the hub with full strength Ambroid; they won't come off in a hurry! Ensure that the shaft wire and hub are at right angles.

I use a lightweight radio model covering for the hinges; in UK this is called Litespan. The hinges are Kagan/Brown style, attached to the wood with Ambroid; no heating of thermoset adhesive is necessary.

The spring, of 0.005 wire is wound on a 0.020" mandrel held in the minidrill which is held in a vice with its axis pointing vertically upwards. Fix the free end of the wire in between the segments of the chuck with the help of masking tape. Rotate the minidrill slowly by hand while feeding the wire on to the mandrel.

To make the spring the correct size, I follow Bob Randolph's design criterion that the spring will deflect 30 – 40 deg when the cruise torque for the model is applied. This gives a spring considerably stiffer than most people have used. You will realize that this criterion can be applied to any class of model for which a VP prop is allowable. Trial and error is the easiest. I measure the deflection by hanging a weight on the free end of the spring while it is still mounted on the minidrill. For this test, the axis must be horizontal. Rotate the minidrill so that the free end is horizontal with the weight on. The torque is weight times distance from the centre of the mandrel.

The prop blades are built in the usual method, but to attach to the spar, the ribs are cut at the intersection with the spat and each half is attached to the spar to ensure the top of the rib is flush with the top of the spar. I use fine nosed tweezers to hold the rib so that a single edged razor blade can be slid along the side of the tweezers to make the cut. I use a segment of blade mounted on a handle about 3" long. It's very fiddly; try it out on a bigger prop eg F1D first!

Covering

With the demise of Y2K2, this has become a real problem again unless you still have some! The alternatives now seem to be OS film and microfilm. I suggest using OS film to get one or more models trimmed; they will be far easier to maintain than when covered with microfilm. Some recent supplies of microfilm produce sheets that simply will not slacken on the frame. I have used 1/2" by 1/8" light balsa for these and have found heavier ones to be no easier to use.

If the film that you use does not slacken on the frame after say 2 months, I believe that it will be necessary to cut the film off the frame and support it with thin strips of masking tape so that the film is slack. The film appears to shrink slightly after removal from the very stiff frame ie it relaxes after the tension is removed. If the film is used too soon, it will probably tighten after covering the wing and tail which will then warp uncontrollably – not good! I have had this problem with old rules F1D's and this shrinkage can take months ie a typical ageing period. Although I have not tried it, it may be worth spraying the outline with 3M's photomount adhesive instead of wetting; this will minimize distortion of the outline after covering.

General

Building 35 cm models really light ideally requires some experience of F1D; all components are bigger and easier to handle.

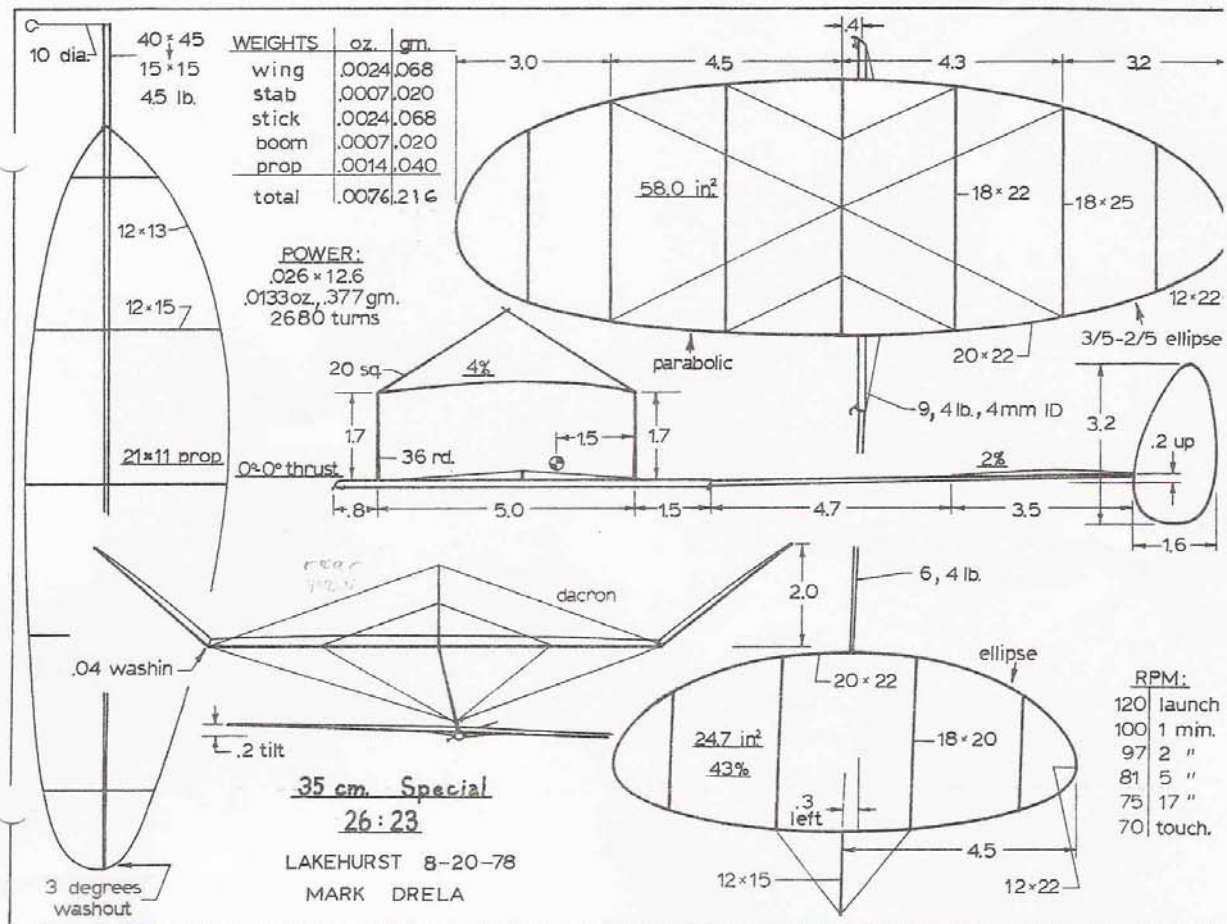
Drela 35 CM

Here is the 35cm plane from Mark Drela. It is a remarkable achievement, considering that in those days they did not have Tan II, boron or variable pitch propellers, and he did that time, that took many years to improve. He did it by building unbelievably light-look at the weights: .216 grams, or 0.0076 ounces!

Something else about 35cm: I don't know if you are aware of the following and/or find it of interest to your editorial about 35cm. You may change any way you find it convenient. When I first saw a 35cm model, it made me the impression that it was sort of a blown-up Mini-Stick. After measuring it, I realized that it was practically a Mini scaled-up twice its size. Sometime later, I understood why: Just as the Mini was originated by Tom Vallee as a living room stick (LRS), he himself came with the idea of doubling its size and called it Gym Stick, although for some reason that escapes me, he decided to play it in metrics instead of Standard (this may remain a mystery, as he is gone now).

I learned about it from Bud Tenny's May 94 MA issue column, where he published all the rules that Tom originally thought of, but later dropped in favor of only one: Max span 35cm, as is to this day (In continental Europe microfilm is banned for this class, otherwise is the same). The great thing of this class is that leaves us free hand to design and experiment whatever we want, and in a compact size, easier to build, carry and fly in smaller places.

-Luis Alvirez



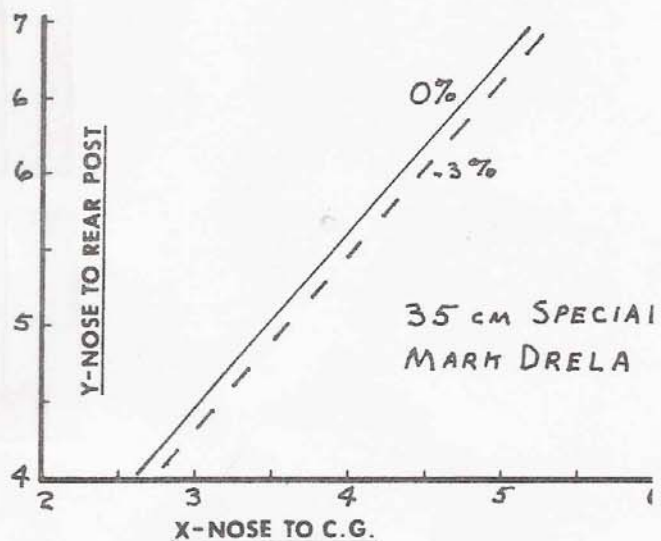
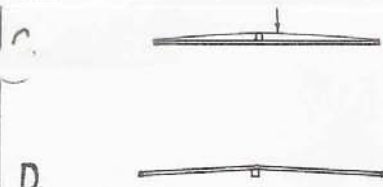
STATE OF THE ART

Dear Bud,

Included is a drawing of my 35 cm. model that managed to break Laurie Barr's record of 24:00. The flight was made during the August 20 session in Lakohurst under not the best of conditions. There was extensive air movement in the hangar at the time and the humidity was high (over 80%). I think the plane could benefit from a larger prop and more rubber. The weight can be brought down also, since the wood used for the model was not of the best quality. It appears that 30 minutes is not far away! By the way, if anybody out there is looking for something different or challenging, then the 35 cm class is for you. These planes are extremely economical; a single sheet of wood will make two motorsticks and two tail-booms. Also, compared to, say, an A ROG, they are far easier to build, fly, and handle. Try it, you'll like it!

Probably the most significant detail about this particular plane is the differential area in the wing in addition to the offset. The parabolic shape of the left wing concentrates more area in the tip than the elliptical shape of the right wing. This gives a plane that can bomb up under full torque without offset thrust, and with very little washin and stab tilt. An FAI with a similar setup needed only 1/16" washin to control the power burst. This can do nothing but help the cruise.

MARK DRELA



35 cm Indoor Models

By Slob Dan Medic, Novi Sad, SCG

Introduction

The first indoor model I built was in 1989. It was a “35 cm Paper” model, similar to model in Fig.1, covered with relatively thick condenser paper, that weighed 1.3g, and used a Pirelli rubber band motor of 1.3g. It flew 7 min and 10 seconds. There were a lot of competitors, and with this time I managed to take third place. That was a big success for me, and I was caught in the net of “indoor”. From that time up to now, with a few breaks over the years, I have flown 35 cm models with great luck, usually in 3-4 competitions per year, all in my country. In the mean time I have advanced up to models (Fig.2) covered with Polymicro film, weighting 0.81g, using TAN II rubber weighting 0.78g. I set a new YU (now SCG) state record in 2000, with a time of 18 min and 45 sec, in the Belgrade Fair Hall (22 m high ceiling).



Fig. 1. My old "35 cm Paper" model



Fig. 2. Record "35 cm Paper" model in flight

The regulations for “35 cm Paper” were somewhat flexible up to this year. In the beginning, that was category “D-1”, and prescribed only a few “mean” characteristics without great detail: “projected wing span must not be more than 35 cm; all parts of model must be built from solid material, and must be covered with paper.” Later, some more details were included in the rules for “35 cm Paper”, specifically: “covering can be from any material except microfilm; reinforcement fibers are allowed on the stick; and models without rubber motor must be no lighter than 0.8g.” These rules have remained in place to date. As for prop, the rules were not amended to be more detailed, and we concluded that VP or VD props are allowed. All these changes resulted in models weighing from 0.8g up to 1.5g. Of course 1.5g models cannot compete effectively against 0.8g ships. Due to large discrepancies in weight between different models, the number of competitors declined over time.

Parallel to “35 cm Paper” a separate category was developed, “35 cm Microfilm,” which are models without any limitations except wing span, and that the covering must be microfilm. For a long time microfilm models were superior to the paper models, but on at least one occasion, when I set a new record with “35 cm Paper”, the result was better than the competing microfilm models. Accordingly, we concluded that division of "paper" and "microfilm" models was no longer relevant. I proposed new regulations for two different classis of 35 cm models, and the new regulations will be effective beginning January 1, 2006 in my country (SCG). The new classis are "35 cm Paper" (or 35 Standard) and “35 cm Open” (or 35 no limitations).

Regulations

Proposed new regulations for 35 cm indoor models are as follows:

Class - "35 cm Paper" - Indoor Model Aircraft

According to definition this is monoplane model aircraft powered by one extensible motor, and in which lift is generated by aerodynamic forces acting on fixed surfaces.

Characteristics of model are:

Wingspan, maximum projected	350 mm
Weight of the model without motor shall not be less than	1,2 g

Structure, covering and all others shall be the same as for F1L (EZB) models according to FAI rules.

Basically this means that only balsa wood and adhesive are to be used for the basic structure. The motor stick must be a solid single piece of balsa. The tail boom must also be solid and of one piece of balsa but may be an extension of the motor stick. The propeller must be all balsa. There are to be no devices for changing any part of the model's geometry or torque during flight. Only the natural flexing of the structure due to flight loads or motor forces is allowed.

Models are to be covered with any commercially available solid sheet material such as paper or plastic. Microfilm as covering is not allowed.

Class - "35 cm Open" - Indoor Model Aircraft

The definition of models is the same as for "35 cm Paper", but characteristics of models are:

Wingspan, maximum projected	350 mm
Weight of the model without motor	no limitation

In the structure of these models there are no limitations in design or materials. For covering any kind of material without limitation is allowed. All other regulations as number of flights, definition of an official flight, number of models, collision rule, steering, timing of flights, number of helpers, launching, and ceiling height categories are the same for both classes "35 cm Paper" and "35 cm Open" and same as for class F1L (EZB) according to FAI rules.

Designs and properties

From a large variety of different designs, I decided to show my best 35 cm model design. That is model "Duh" (eng. Spirit), shown in Fig. 3, with all layout dimensions, and in Fig. 4. with materials and construction details. On my earlier models (Fig.1) the stick was laid horizontally, with rubber motor on the left side. The stick was without boron fiber reinforcement, and the benefit of that arrangement was smaller influences of stick bending under the torque of fully wound rubber, changing the wing attack angle, and launching was without problems. In my new design I decided to make stick rather in a normal (vertical) position with rubber under stick, but stick was with boron fibers on both sides.

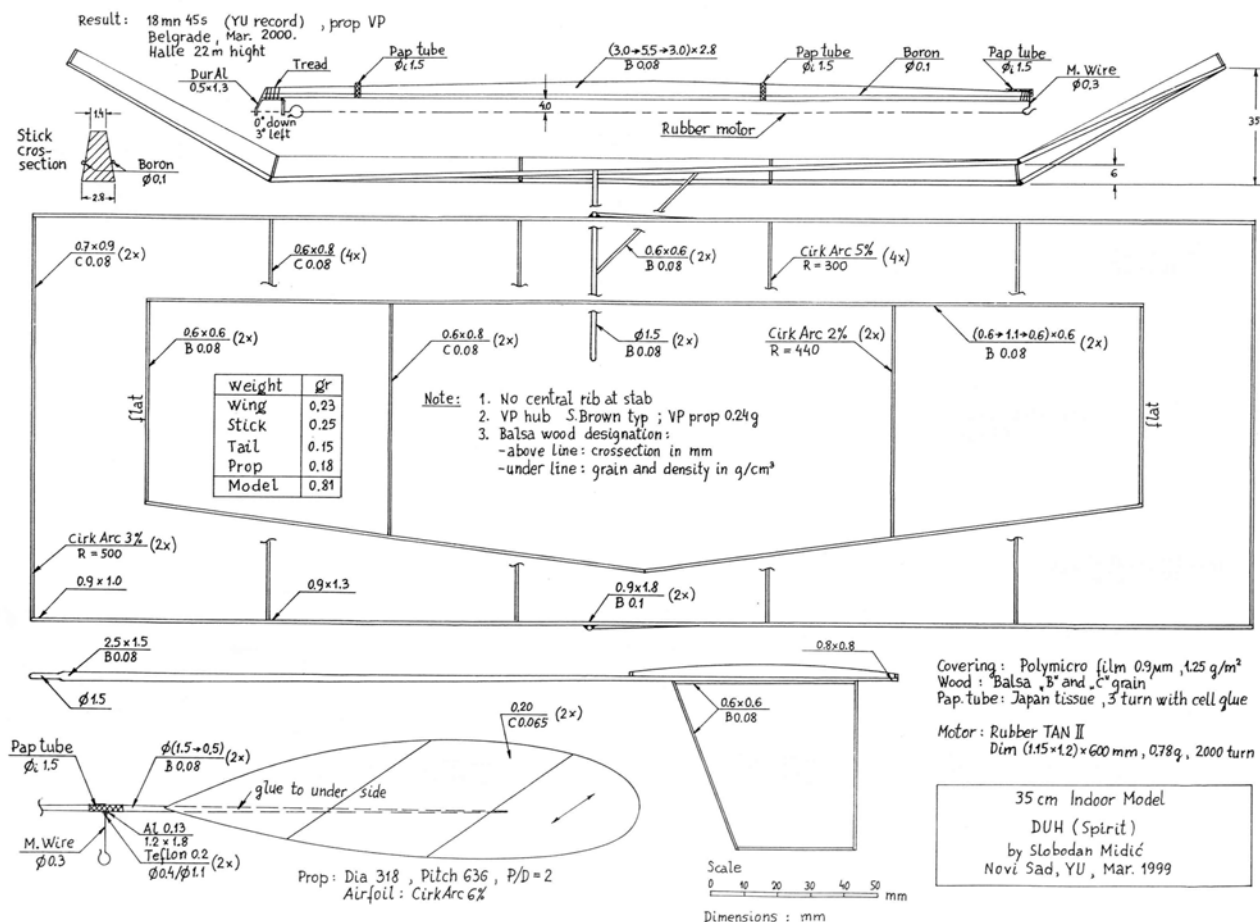


Fig.4. Drawing of 35 cm model "Duh" components

glue the frame to film with dilute contact glue (1 p glue: 10 p solvent), at the beginning only in main points: at corners, and at ribs. Than I glue continually all wood length to film. I train the bush only outside wood, on film and very close to wood. So the very fluid glue comes directly under wood, and because of adhesion nestles the film to wood. Sometimes I glue all ribs to the film on the same way, sometimes I glue only breaking ribs at tips. I don't notice any differences in flight. Maybe the all glued wing is more stabile, but when flying I don not notice any differences at all.

After drying the glue, I remove the two coins, and remove the paper with glued frame, temporarily. I remove all rods from table, put some cardboard on the table, and put one rod on this. I lay up the paper with frame to cardboard, so one edge is on rod, other edge is on cardboard. Then with a razor blade and steel ruler I carefully cut the film as close to the wood as possible. That is for the length of both spars. Along the outside ribs I cut the film together with the paper with good sharp shear. In this way the wing is covered, and the cover perfectly follows the ribs not only at ribs, but also between ribs. You can see this when the model flies. Raise the tips, and glue the slack at breaking ribs in the conventional way.

Prop blades are made from very thin C balsa. Each blade is made from three pieces, joined together with a small overlap. The exact shape of blade is made using a razor blade and cardboard template. I wet both flat blades in water (5-10 min), and put the blades on the helical form to get proper airfoil and aerodynamic bend. First I lay up on the prop form the balsa blank form which provides the camber for airfoil (wet), then a thin cloth, than blade 1, than cloth, than blade 2, than cloth, and at the end I wind a cloth tape around the full block, and all this I

put to dry in oven 1 hour at 70 deg Celsius. The prop spar is glued to underside of finished blades. A small hole on the blades at the place of spar ends help to center spars on blades.

Flying and trimming

Flying 35 cm models is wonderful event. But, at the beginning there can be some problems with trimming, so these are my basic observations to assist in getting better times.

The rubber motor rotates the prop to the right, and the model flies in left circles (left circle means that the left wing is towards to center of cruising circle). Diameter of flying circles needs to be about 4-5 m. Smaller circles give you less drifting of the model in flight. Bigger circles get you possibility for better result but more air movement and drift of model can be expected. That means it's sort of a compromise. Size of the circle can be adjusted with the slope of stab, more slope to right side gives a smaller size of circle. Adjusting the difference of attack angles between wing and stab is made with rising and descending of wing leading edge by wing holders in paper tubes.

Center of gravity (CG) is at 90 mm (75% of wing cord) behind leading edge. With the rubber motor the CG is about 82 mm (68% of wing cord). So, while there is no problem if the CG point is at the trailing edge (usually), but when the CG is ahead of the trailing edge, longitudinal stability is better, but flying time is shorter. Some people use a balancing weight to change the CG position, but that is more weight added to the model, and also a shorter flight. Try adjusting the model without adding the weight. So, it is necessary to experiment and fly, adjust, fly, adjust, and so on.

The next issue is how to select the proper rubber size? If the model lifts up quickly, and in a short time the prop is hitting the ceiling and all the turns are used up in flight, the flight time will be short – and your rubber is too strong. If the model lifts up slowly, and lands with too many turns (more than 300), the rubber is too slim. With proper rubber size the model will land with just a few turns remaining. For making proper rubber selection the trick is: flying, flying, and flying.

Conclusions

The 35 cm indoor events are very nice categories, and are popular in most countries in Europe. In the two different weight and build versions ("35cm Paper" and "35cm Open") rules give significant latitude to implement a broad range of design, limited only by imagination and invention. Both versions result in nicely proportioned models, not too big - nor too small, with excellent flying properties.

"35 cm Paper" designs are simple, but with flying times up to 15 minutes, model gives builders great satisfaction for time spent designing and building. They can be made fairly easily with (relatively) available materials, so they are good for all ages including beginners (especially for scholars, students, young people), as well as for hobby flyers.

For "35 cm Open" building solutions can be complex as one wishes, and they have flown up to 37 minutes or more. These models can serve to introduce people to an "expert level" of indoor model building, so they are ideal introduction in the world of F1D models.

Unfortunately 35 cm models are not included in the FAI rules, so differences (generally small) in the rules of different countries can complicate communication and standardization of the category. If FAI decides to standardize 35 cm models, it would be a significant step in bridging the models and people in different countries flying 35 cm. Adding "new" indoor flying classes to the existing rules will enable international competitions in these attractive categories.

Fig.5 "New" Duh design

After one ungainly attempt release the model from lantern two middle ribs are replaced with one central rib. "Antenna" prevent prop to beat the ceiling, and prevent drift model under ceiling to the wall with each bump in halls with spherical ceilings.



WINNING INDOOR DESIGNS
Edition for 2002-2005

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Sova 35 Cm Design and 38
More!

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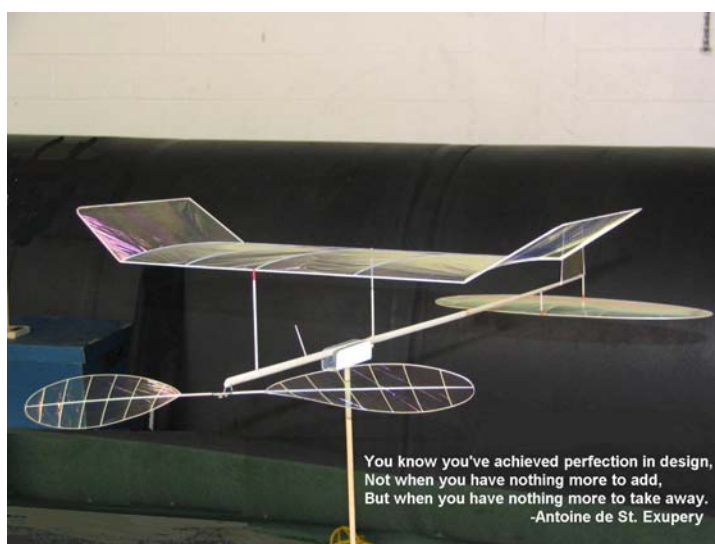
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Winning Indoor Designs 2002-2005

Edited by
Carl J. Bakay

Published by
The National Free Flight Society



You know you've achieved perfection in design,
Not when you have nothing more to add,
But when you have nothing more to take away.
-Antoine de St. Exupery

Some Ramblings on Envelopes for Rubber Motors from the Indoor List

I bought my last batch from Office Max,

Brand: Columbian

Size: No 3 Coin, 2 1/2 x 4 1/4

Box Size: 500 envelopes.

Price : \$14.49

http://www.officemax.com/max/solutions/product/prodBlock.jsp?BV_UseBVCookie=yes&prodBlockOID=537343190

I generally fly models with rubber sizes below .075. If you fly events with bigger motors like OPP, these bags can get 'bulky' looking with a piece of .110" x 20" long in it. I have also used the 3x5 wax paper/stamp type and plastic 3x5 ziplock type bags as well over the years. They work fine too but I find the wax stamp ones fell apart easier from use. The ziplock ones were OK but you then had to make a label up and place it on the bags to write anything on them (same with the wax ones) Then I got some plastic ones with the white writing area on them, but that tends to bleed if you get rubber lube on it. So of all I have tried I still find nothing better than the little yellow envelopes. You can write notes on them and they work well. And if you open the box nicely, you can use the box as the container you store the rubber motors in as well.

-Don Slusarczyk.

I purchased thousand plastic bags with a white block for writing years ago for Doug from U.S. Plastics for six dollars.

<http://www.usplastic.com/catalog/product.asp?catalog%5Fname=USPlastic&category%5Fname=88&product%5Fid=15512>

Zipit™ Resealable Bags with White Block Transparent bag provides protection for contents and clear visibility. A white area for writing on is the quick, easy way to mark contents of bag or write instructions. Available in both light and heavy-duty bags. Meets FDA standards. Sold in full cases only.

This product is available in following variations: Item No. Description Sold By In Stock List Price Qty
48383 2" x 3" 2 Mil Zipit™ Resealable Bags with White Block.

-Mark942001

I was told to use the glassine envelopes when I bought rubber for the first time a few months ago. I went to the local stamp and coin shop and picked up 100 of them for \$4.00 or so. Searching for Glassine Envelopes on yahoo or ebay turned up numerous hits too.

-Eric Monda

Ebay is a good place to find small ziplock bags for motors. Search on "ziplock bag" or "ziplock plastic bag". You will get dozens of responses in all size ranges. I bought 1000 "2 X 2" bags recently. Like always on Ebay, look at the shipping charges. Some are reasonable and some excessive.

"Glassine" envelopes for stamp collecting make good bags for motors. And they are "archival", i.e., acid free.

Google on "glassine stamp envelopes" and you'll see a host of sources. The smallest are usually 1.75 X 2.875 or 2 X 2. But they are made in dozens of sizes.

-Steve Brown

Do a ebay search for Ziploc bags I found mine for less than \$20 for 1000 including shipping. If you get the write on type of bags they are easy to label with a sharpie or even a ballpoint pen. We made a club order after I

got mine from another ebay vendor and got them for if I remember correctly \$15.00 per 1000 bags. I also used the staples coin envelopes for years with no ill affects.

-Fred Tellier

I get my 2"x3" Ziploc baggies at Wal-Mart. They are in the craft section and are about \$.99 or \$1.99 for 100. I use a fine point felt tipped pen to write on them. I used to use some coin envelopes that I had gotten at Office Depot but they seemed to be causing the rubber to deteriorate so I quit using them.

-Jerry Combs

2006 Ornithopter Postal Contest

An ornithopter is a model that flies by flapping its wings. If you've never built one of these intriguing models, this new contest will give you a good reason to try one! There are two categories: Standard and Simplified. The Standard category is based on AMA rules. The Simplified category limits the complexity of models, making it easier for a first-timer to compete.

The contest is open to everyone and there is no entry fee. Fly your ornithopter locally and send in your best flight times by mail. The contest runs now through June 2006. For details and entry form, visit the Ornithopter Zone web site, www.ornithopter.org, or send a self-addressed, stamped envelope to The Ornithopter Zone, 582 Laurelton Road, Rochester NY 14609.

The Ornithopter Zone web site also has some free plans and other resources for building your first ornithopter!

Nathan Chronister
The Ornithopter Zone
www.ornithopter.org

Discover Flapping-Wing Flight!



Mass launch at the National Building Museum in Washington, DC.

The DC Maxecuters hold 3 'funflies' in this great space every year, providing much-needed public exposure of the hobby.

Getting a TRUE helical pitch prop-with straight spar - Phil on props

Phil Alvirez

Have you ever measured the angles of your props at every station? What figures you got? Were they the same as your graph? How close were they to helical? Why they never matched? Here you may find some answers to this puzzle.

There are two basic ways to make a prop: molding it on a cylinder, or on a block that has been carved to certain specifications.

Much has been said about the carved block advantage over the cylinder, as the props molded on a carved block are true helical pitch, while the ones molded on a cylinder are not, instead giving a linear variation that is considered less efficient. All the articles that I have seen so far, such as Joe Bilgri's (Model Airplane News, April 1960, p 24), and Jim Jones' (M A N, August 1960, p 53), show an almost identical sketch with the dimensions and shape of a block to carve to mold the prop (figs 1 and 2). Notice that all the lines shown are straight (more about this later). Even Jones praises the superiority of the prop made on a block carved to true helical pitch, saying that the ones molded on a cylinder are just "fans." Through the years, I have been accustomed to see that same sketch, showing the block's dimensions, and I followed the instructions, carving blocks to match them. The thing was, somehow, something didn't seem right.

It took me some time (read: many years) to realize that I could not carve a block following that same sketch, and getting the correct angles on some stations. Jones' method allows you to get a straight spar, that's right. But it was not until I decided to sit down and think and make a series of drawings, station by station, that it began to dawn on me something. It took me several attempts, with unsatisfactory results, carving blocks following "The Sketch", to decide to try a block large enough in cross section to allow for the spar line to run at the dead center of the block (and still getting enough width for the prop blade to fit), and then to draw the angle of the blade, with that line touching the dead center at every station (doing one drawing per station), that I fully understood what's going on. Bear with me.

First, you need to get the angle at each station. For that, do the drawing of the prop pitch, for a specific pitch (fig 3). With a protractor, measure and mark each station's angle. Draw a two inch square and mark the center point. For each station, draw a line that runs through this center point, at the same angle of that station.. Example: For station 1, the angle is 73 degrees (fig 4)

You will need to measure the distance from the center point to the point where that line touches the edge of the block. In this example, that line touches the horizontal edges of the block (top and bottom) for the first three stations, so the distance we are talking about will be the horizontal one.(for the station 1 in the example it is 7 mm.) Now mark this point on the balsa block, once at the bottom edge, to the right of the center line, and again on the top edge to the left side of the center line (that's the angle of the blade). Repeat for each station. You will notice that, in this example, the line changes from the top and bottom of the block for the first three stations, to the sides, starting from the fourth station, so you will be marking the sides instead from that station to the tip. Mark both sides: On the right hand, near the bottom, and on the left side near the top. Now join the points with a pen, and get ready for a surprise. Sit down and analyze the situation: You will notice that the lines on

the sides (one on the right side near the bottom, and another near the top on the left side) are NOT straight, and that the bottom (right side) is NOT horizontal; it raises (with a curve) (fig 5). So, what's going on?

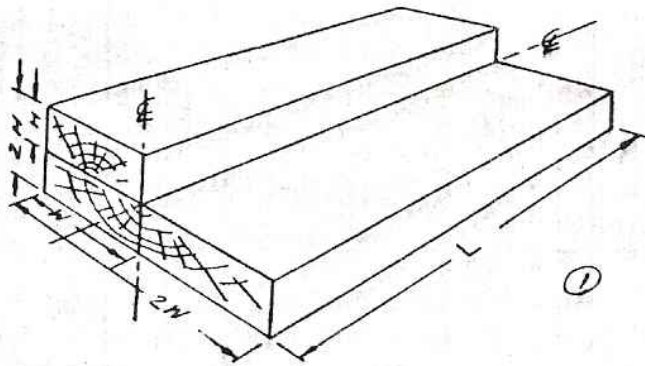
First, look at the graph of the prop: Notice that the angle variation from station to station is not the same: From station 1 to 2 is 14 degrees; from station 2 to 3 is 11 degrees, from station 3 to 4 is 8 degrees, from sta 4 to 5 is 6, from 5 to 6 is 5...so, it's NOT linear. It decreases as you move towards the tip. That's the difference between the "inferior" linear cylindrical (fans!) and the "superior" helical, remember? Then, in order to get a true helical pitch, how could you get that variation in a straight line? No way, Jose!

So, you may get a straight spar, following Jones approach, but you are not getting a true helical pitch from a block carved with straight lines! How about that? So, why bother, going through all the aggravation of carving a block instead of using a cylinder? And just look at some times made with "fans": Twenty minutes plus with an Open Pennyplane (Anthony D'Alessandro-20:52-9/13/03-Lakehurst-INAV issue 115); fifteen minutes plus with a Mini-Stick (Rob Romash-15:06-09/01/01-Lakehurst-INAV issue 106).

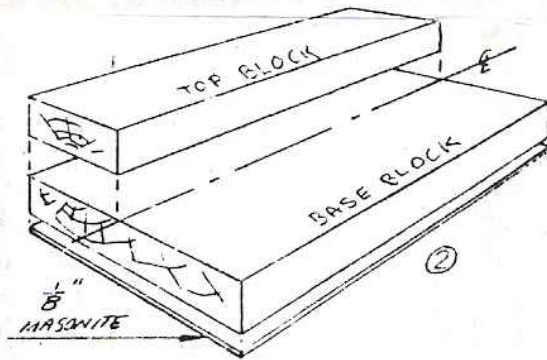
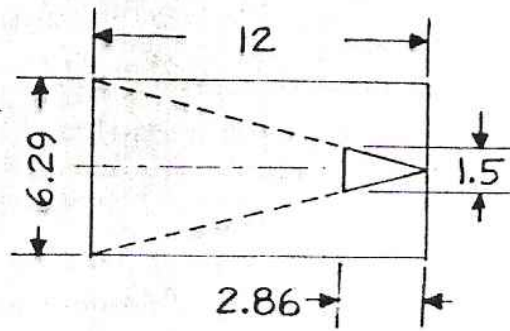
So, how could these guys get those times with the despicable "fans"? And, wait, that's not all: I have noticed that the champs use washed-out tips. What does it mean? When you wash-out a tip, it gets dangerously close to cylindrical pitch, as you change the non-linear variation that characterizes the helical, towards a linear one (cylindrical), so most of the prop has now a linear variation (or close), except for the part near the root, where the increase is larger. Or, said in other words, you have a cylindrical prop with washed-in root, molded on a block. Now, after all of this, please don't think that I believe that the cylindrical pitch is better than the helical-I really consider TRUE helical as the most efficient. But most modelers, if not all, have been using props molded from carved blocks that are, at the end of the day, much closer to cylindrical than they ever thought or would like to admit. I think that true helical has an edge over cylindrical, and the extraordinary talent and experience of the modelers who have achieved those spectacular times with cylindrical props counts more than the disadvantage of the cylindrical. And there are events where, as you need a built-up prop, you have to carve a block to put it together, no matter what. Besides, with a prop molded from a block carved properly, you get a straight spar, while with a can-formed prop, the spar line is bent. On the other hand, the major asset of the cylindrical props is that, to build props on a can you don't need to carve a block. And all things considered, one needs, first of all, to get on the air as soon as possible and gain experience flying, trimming, getting the most of the motor by learning to wind more efficiently, finding the best combination of rubber and prop area, shape and pitch, and then, maybe, (but, as those times prove, not necessarily) getting into more sophisticated things.

Just think about it. After all, thinking is an adventure.....

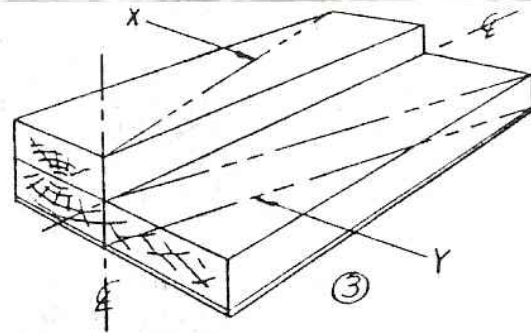
Phil



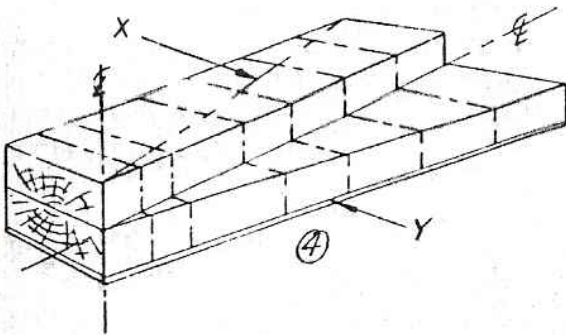
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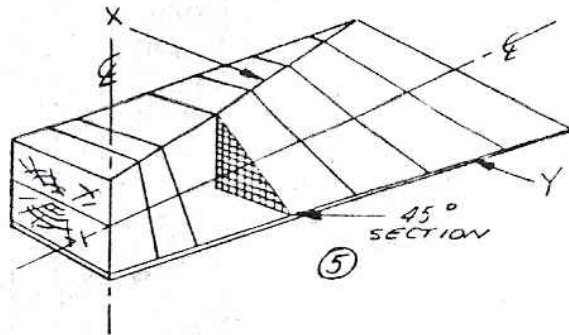
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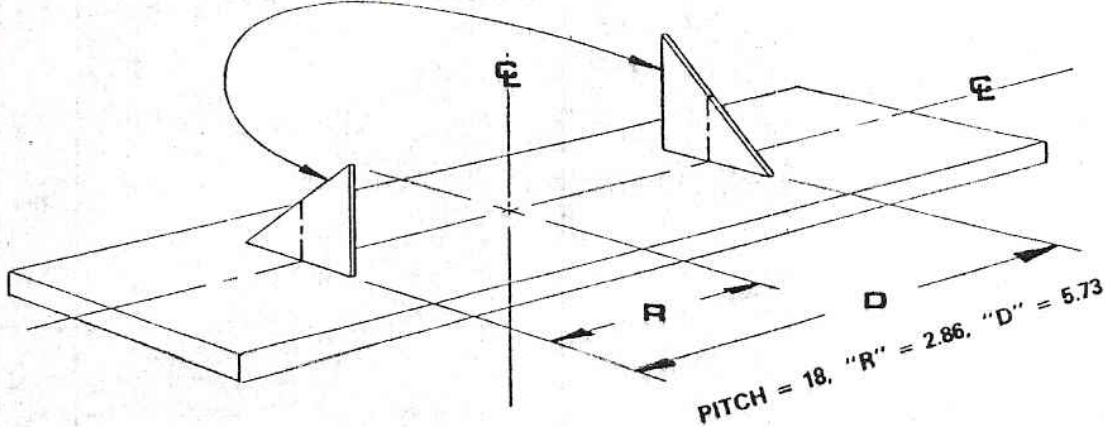


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45° TRIANGLES



ASSY. FIXTURE

Fourth of July at Lakehurst NAS 2005
Photos by Jeffrey Hood



Brett Sanborn took a First in Ministick and
a Fourth in LPP



Chris Goins F1d heads for the rafters



The Famous Romash Model Box



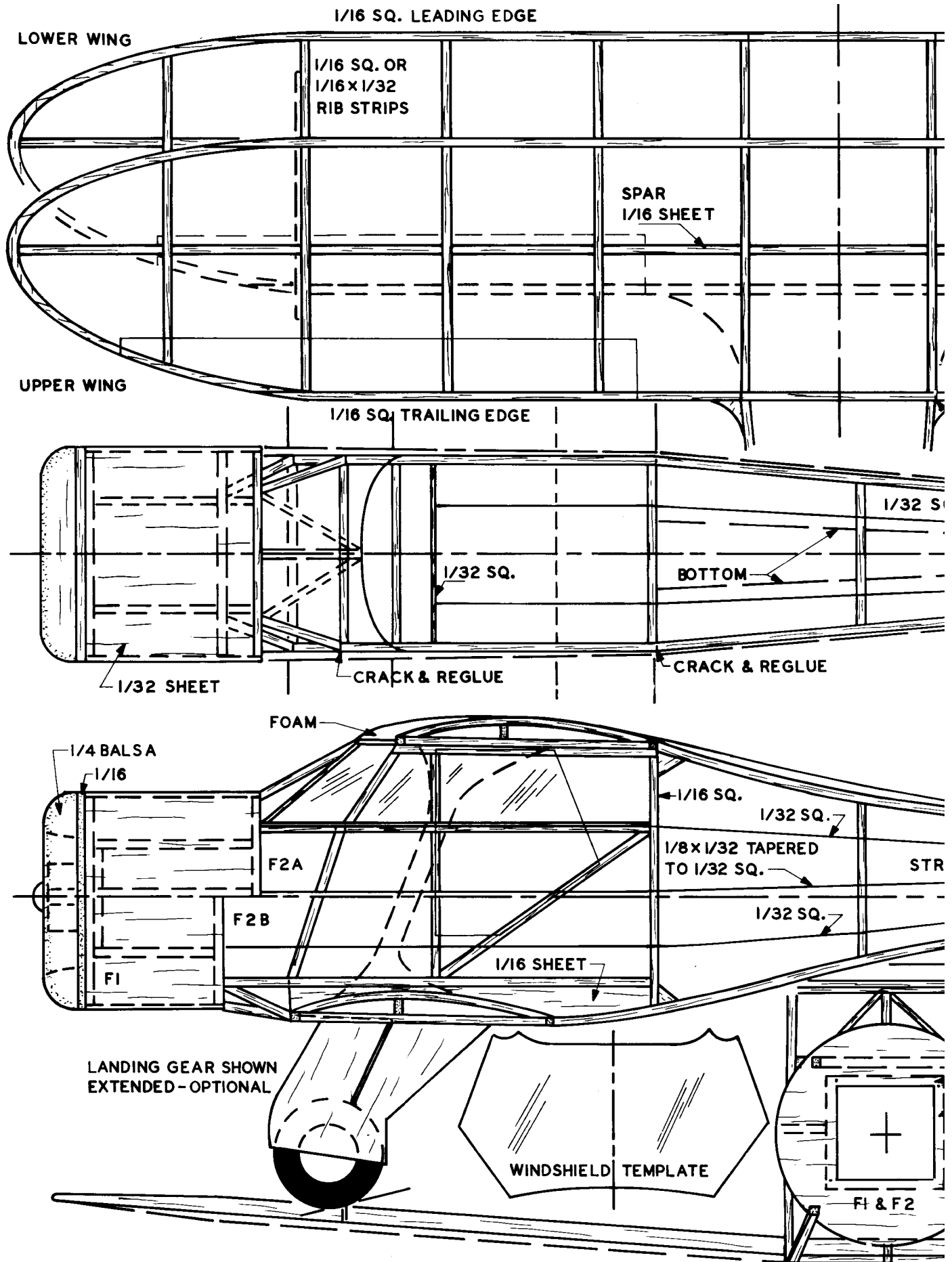
Nick Ray watches as Ray Harlan shows how.

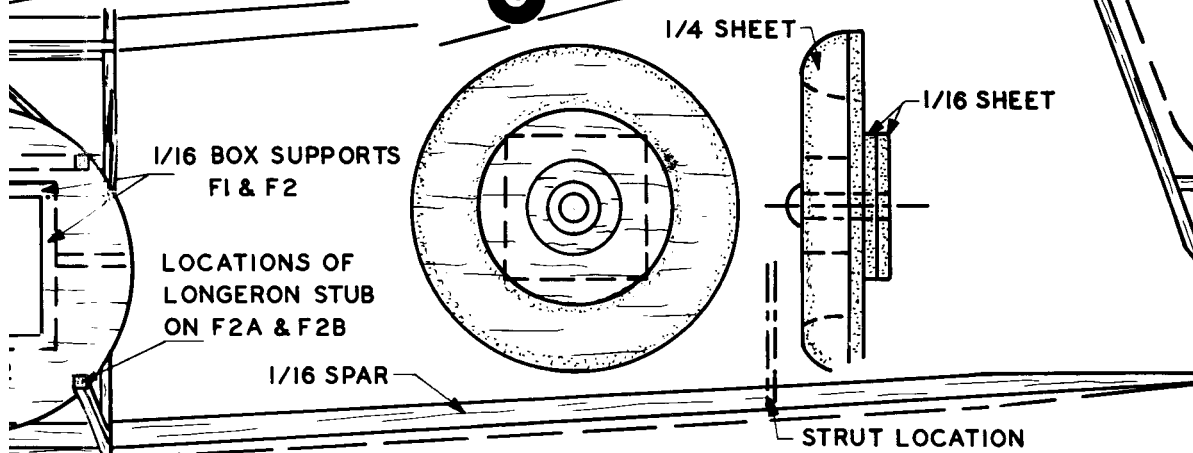
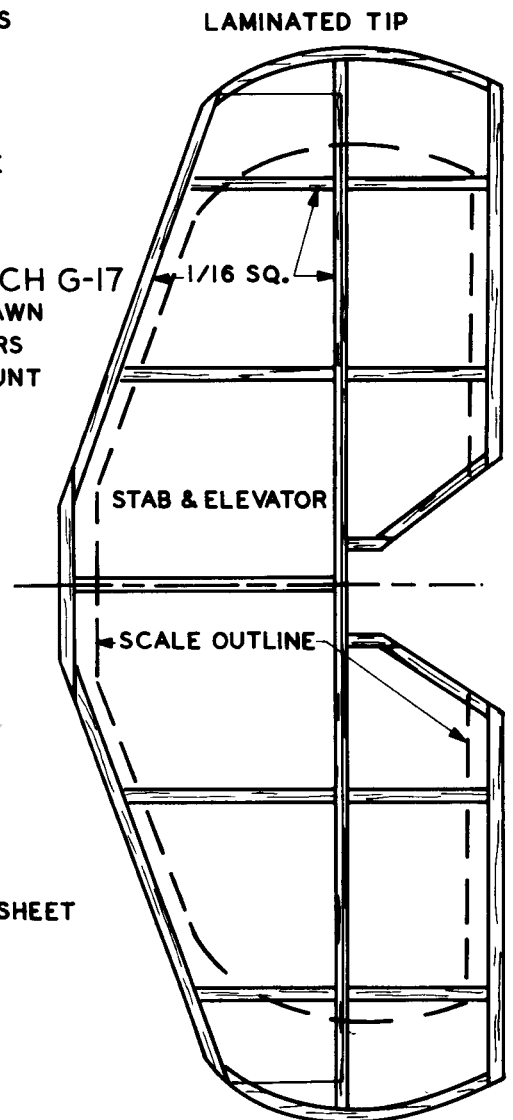
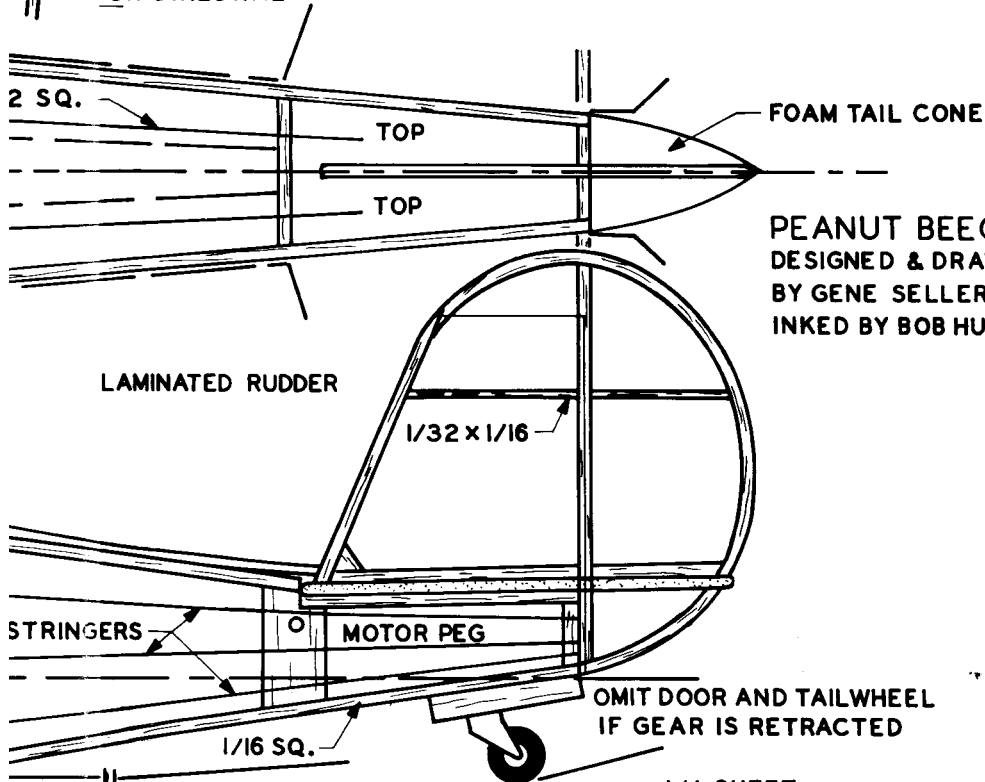
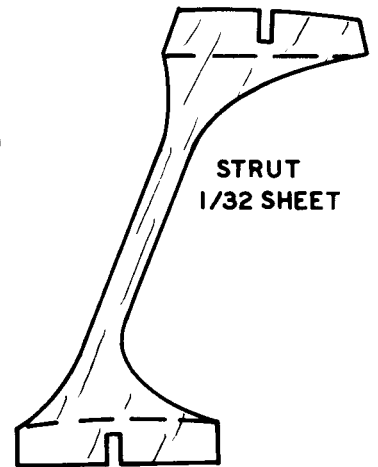
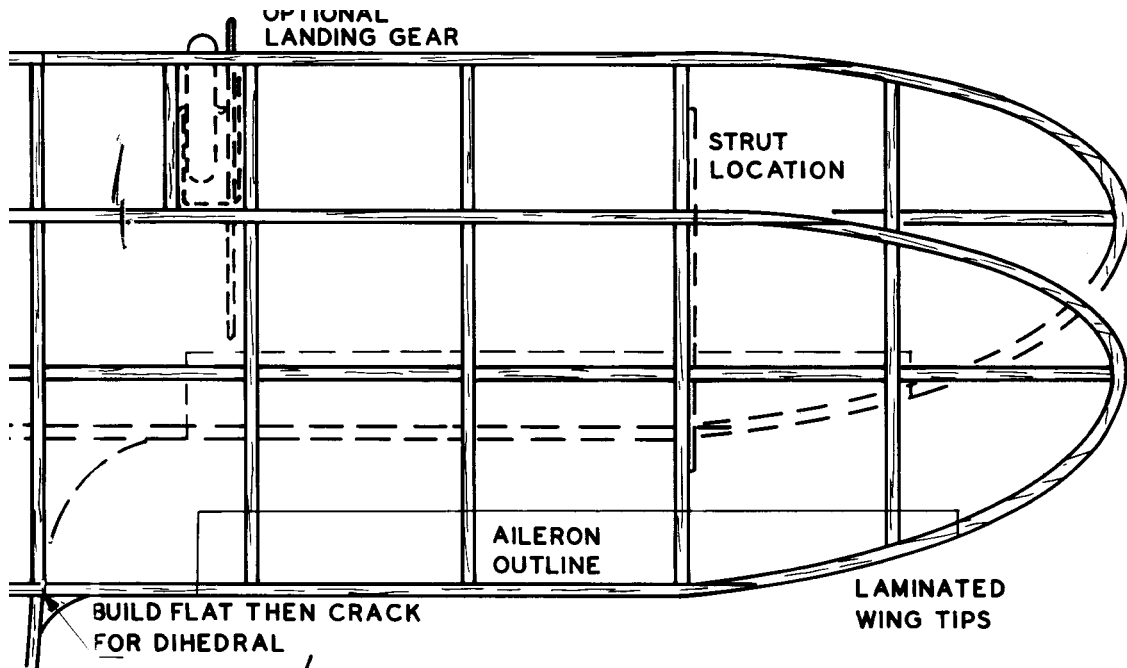


What your Model sees when it gets Stuck in the
Catwalk



Lakehurst Carrier Deck Seen from the Catwalk





MIDWESTERN STATES INDOOR CHAMPIONSHIPS
UNIVERSITY OF ILLINOIS, MARCH 25-26, 2006

Saturday, March 25th

*H.L. Glider (212)

1. Kurt Krempetz	105.0
2. Ken Krempetz	15.6

*Bostonian (215)

1. Bob Warmann	332
2. Ed Konefes	287

Ltd. Pennyplane (208)

1. Tom Sova	12:38
2. Jim Richmond	12:28
3. Chuck Markos	11:56
4. Ed Konefes	10:13
5. Bob Warmann	9:23
6. Larry Loucka	9:05
7. Paul Masterman	8:23
8. Phil Alvarez	6:56

*Std. Cat. Glider (218)

1. Bob Warmann	122.6
2. Chuck Marcos	121.5
3. Ken Krempetz	101.7
4. Bob Johnson	87.4
5. Kurt Krempetz	74.6
6. Charles Bauer	55.7

Ministick (220)

1. Jim Richmond	9:34
2. Larry Loucka	9:31
3. Tom Sova	8:51
4. Andy Mitas	4:37
5. Phil Alvarez	2:40

EZB (206)

1. Jim Richmond	24:21
2. Doug Shaefer	15:28
3. Tom Sova	15:18

*Unlim. Cat. Glider (219)

Kurt Krempetz	148.6
Ken Krempetz	99.5

*Double Whammy

1. Ken Krempetz	4:27
2. Paul Masterman	3:35

Science Olympiad

1. Paul Michalowski	4:15
2. Eric Kato	3:50
3. Kyle McClary	3:00

*F1L (217)

1. Tom Sova	32:58
2. Larry Loucka	32:15
3. Doug Shaefer	31:51
4. Chuck Markos	30:45
5. Paul Masterman	21:55
6. Andy Mitas	18:08

Sunday, March 26th

A6

1. Tom Sova	9:01
2. Bob Warmann	5:56
3. Andy Mitas	5:09
4. Ed Konefes	3:51

Pennyplane (207)

1. Jim Richmond	17:00
2. Tom Sova	12:40
3. Phil Alvarez	11:47
4. Larry Loucka	11:27

*F1D (203)

1. Tom Sova	52:41
2. Doug Shaefer	52:25
3. John Kagan	50:19
4. Justin Young	20:51

Intermediate Stick (202)

1. Larry Loucka	17:38
-----------------	-------

* Denotes 2 Flight total

Stanton Trophy

1. Tom Sova	20 Pts.
2. Jim Richmond	16 Pts.
3. Bob Warmann	11 Pts.
4. Larry Loucka	10 Pts.
5. Doug Shaefer	8 Pts.
6. Phil Alvarez	3 Pts.

CONTESTS FOR 2006

- May 7 The 2006 Spring Indoor Fling, hosted by the Clodbusters Model Airplane Club, Inside Swing Golf Dome, Flint, MI, contact George Lewis 810-329-6833, or Fred Gregg Jr. 586-264-1018.
- May 13 Peach State Indoor Championships hosted by the Thermal Thumbers of Metro Atlanta. EZB, LPP, Ministick, HLG, Cat LG, Bostonian, FIL, FiD, FAC Dime, Peanut and Rubber Scale, Embryo, NoCal, A6, TSA & SO, Hangar Rat. North Cob HS, Kennesaw GA. Directions www.thermalthumbers.com. CD David Mills 404-509-4209, davidmillsatl@concast.net.
- May 21 Empire State Indoor Championships will be held on Sunday the 21st, hosted by the Western NY FF Society and the Flying Aces Club. A 128 ft. Ceiling Cat IV site. Building opens at 8 am, flying 9 am to 5 pm. AMA and FAC events, Phantom Flash Mass Launch, 2006 C Wright Stuff student event, F1D Team Selection Regional. CD Vet Thomas, 585-392-5164, vthomas@rochester.rr.com.
- May 27-29 The East Coast Indoor Modelers (ECIM) host a Memorial Day Indoor Meet in Lakehurst Hangar #1. The hangar is 800 ft. long by 250 ft., and 190 ft. high. You must be a member to gain entry to the base. To join ECIM. and for a list of events, contact Rob Romash at cgrain1@yahoo.com.
- May 31-Jn 4 United States Indoor Championships (USIC), East Tennessee State University Minidome, Johnson City, TN. Full roster of AMA, FAI and FAC events. A world-class 119 ft. site. CD Rob Romash at cgrain1@yahoo.com.
- July 1-4 The East Coast Indoor Modelers (ECIM) host a July Fourth Indoor Meet in Lakehurst Hangar #1.. The hangar is 800 ft. long by 250 ft., and 180 ft. high. You must be a member to gain entry to the base. To join ECIM. Contact Rob Romash at cgrain1@yahoo.com.
- July 7-11 Kibbie Dome Annual, University of Idaho, Moscow, ID, a world class site with 144' ceiling. Fly four days, 8am to 8 pm. CD Andrew Tagliafico 503-452-0546.
- Nov 12 Bong Eagles Annual Fall Indoor Contest, Memorial Hall, 72 Seventh St., Racine WI. A Cat II site. CD Joe Adams, 306 E. Kendale Dr., Oak Creek, WI 53154, 414-762-3492, jadams8405@wi.rr.com.

INTERNATIONAL CONTESTS

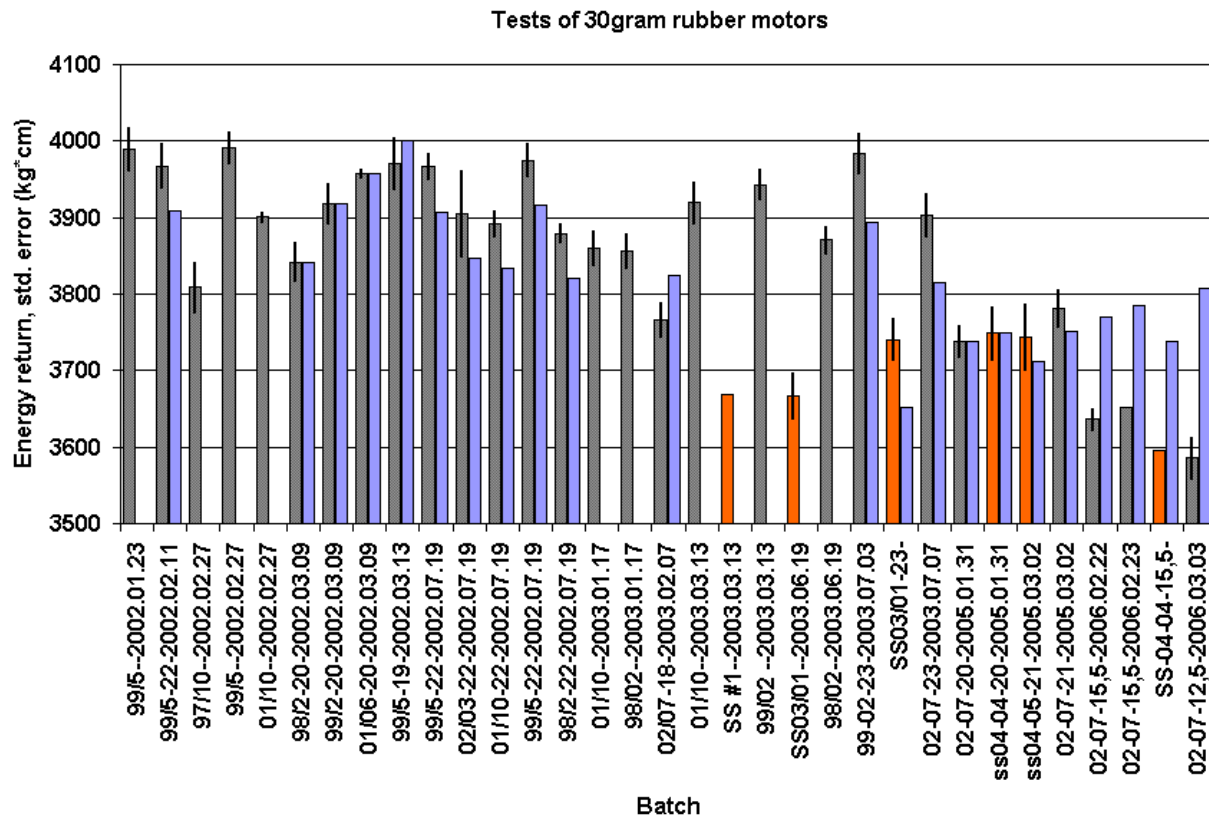
- July 8-9 8th Open Internacional Copa Tabarea, Alicante (Spain). Disciplines : F1D (Indoor Model Aircraft), F1L (Indoor EZB Model Aircraft), F1M (Indoor Beginner's Class), F1N (Indoor HLG)
- August 17-20 14th Dorcol Cup Beograd (Serbia and Montenegro), Disciplines : F1D
- October 2-7 23rd FAI World Aeromodelling Championship F1D Slanic Prahova (Romania)
Disciplines : F1D (Indoor Model Aircraft)

TESTING 30 GRAM F1B MOTORS

by Tapio Linkosalo, Finland

I have been doing stretch tests of 30 gram F1B motors. My rig consists of a boat winch, and a mutilated computer mouse that measures both the stretch (movement from the winch) and pull (movement of a spring turning one bar in the mouse). I then have a piece of computer software that calculates me the target stretch/pull force, and once I have reached that, takes the pull forces for every cm of rubber release (i.e. about 300 measurements) and sums these up to get the energy return.

In Figure 1 there are all the all the 30 gram batches of rubber that I have tested. One batch is typically 10 motors, but it may be also 5 or less. The Y-axis is the energy return (for 30 gram motor), the X-axis labels give <rubber batch>-<test temperature>-<test date yy.mm.dd>. The grey or orange bars are the energy return average for the batch, the error bars are +/- one standard deviation of the motors in that batch, and blue bars are temperature corrected energy returns.



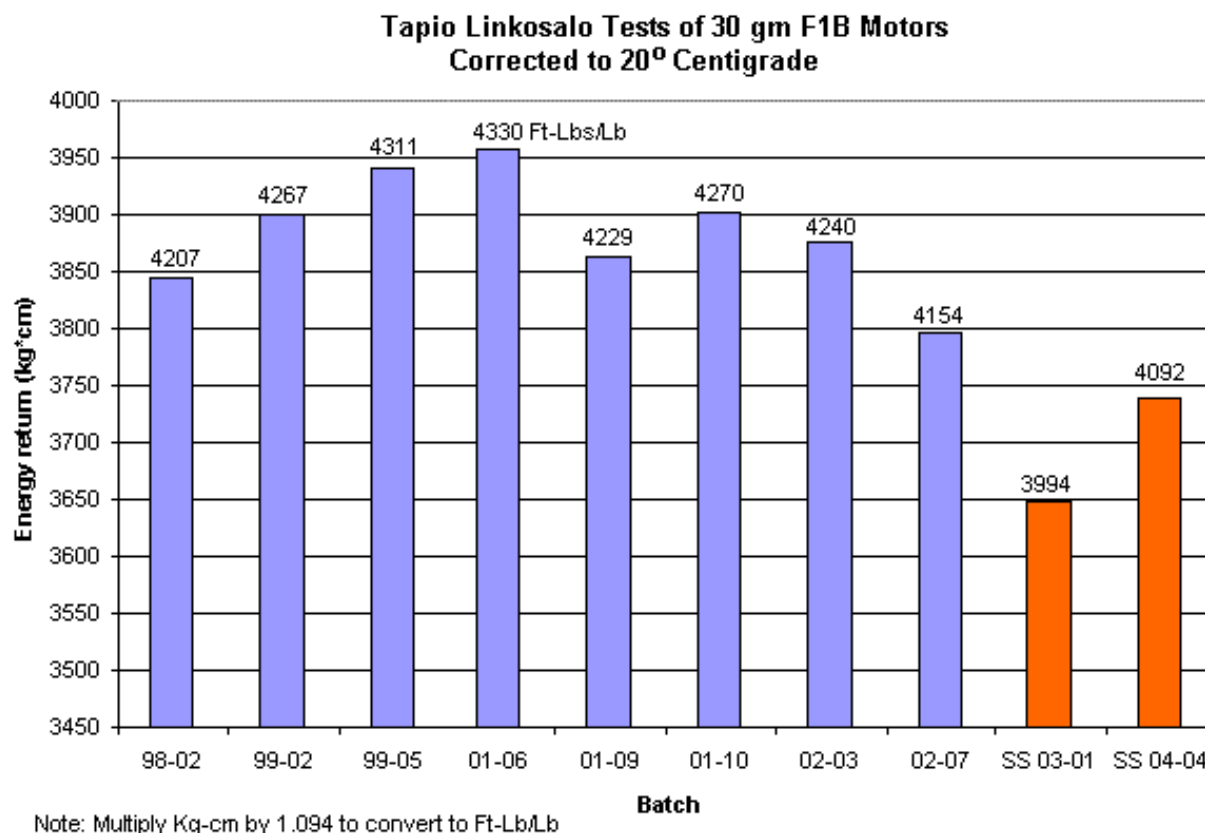
A few observations and notes:

-as you can see, 99/05, 01/10 and 02/07 are the batches that I have had a 10lb box of, thus they are tested most abundantly -after a move last autumn, my workshop has been quite cold this winter, thus clear reduction in energy return. I have tried to estimate the effect of temperature on the energy return to make corrections, but I'm not sure if I have sufficient data for that. Probably not for Super Sport. Thus far my estimation gives values of 0.76% per degree C for Tan II, and 0.86% per degree C for Supersport, as reduction of energy return per degree C of temperature decrease, compared to 20C energy return. I may not have enough tests of SS in the warm, so the figure may change (next summer when I make some more motors to the European Champs...)

I have found that the variation of energy return within a batch is surprisingly small, typically standard deviation is in the range of 0.3 to 0.6%. This means, in other words, that within a batch, 99 motors out of 100 fall into +/- 1.5% of the mean energy return. Does not seem to make much sense to test individual motors from the same batch! Anyway, testing the motors is justified, as a) it will give data of the rubber quality between batches, and b) it will classify the motors by there stretched length = estimated turns that the motors will take. Spare the long ones for fly-offs to get monger motor run there.

You may notice ome blue bars are missing. I did not always record the test temperature. Stupid me!

In Figure 2 there are the overall temperature-corrected means of the different batches that I have tested. Seems that around 1999 the batches were at their best, towards the 2002 the energy return had started to decline, while more recently the SS has been improving and is rather close to the energy return of the last Tan II batches. It seems to be more sensitive to temperature, though.



No More ***Air Flow*** – And Some Things You Can Do

Some of you may subscribe to the Glastonbury Aero Modelers “Air Flow”. We were very sorry to receive David Dodge’s last issue of his wonderful newsletter, in which he and Tony Lincoln announce the end of indoor flying for their club. The Glastonbury High School is undergoing major renovations and is almost unrecognizable. The gym became completely unavailable as of February 2006. Also the club has run out of money 3 times in 2005, largely due to members who fly but do not pay. And lastly, the editor David Dodge is burned out, and will be moving on. Outdoor flying will continue, they say, as it is a separate club anyway.

Your editor has enjoyed an exchange with this club for many years, and we wish them well in their pursuits, and hope to see them back better than ever in the future.

This all strikes a very personal note. In the 60’s and 70’s, aeromodeling was big all over the U.S. of A. I remember Billy Kostar’s father picking me up on Diverty Road in New Jersey before dawn, and riding with them to the Mirror Meet at Floyd Bennett Field in Brooklyn. It was huge. The runways stretched for miles in all directions, with hundreds of contestants and spectators. One kid couldn’t possibly see it all.

The Glastonbury folks mirror a general decline in many areas. Although we still have wide participation in our hobby, many clubs are struggling as the older, founding members drift away, and new ones don’t seem to join or stick around. It seems that every club has the same issue: 30 signed up on the roster, 15 who come to meetings, 5 who sit there, 5 who gripe, and 5 who fly. (Tell me if I’m wrong.) Here are some things we are trying in the South with mixed results:

1. Since taking over the newsletter, I have been pushing a unified approach, embracing all of the clubs in the area as one, not separate, entities. This means publishing photos, contest results, and activities of other chapters besides ours, and flying other model classes besides just what our members prefer, both indoor and outdoor. I also include the other club events in upcoming contest listings.
2. I have been pushing membership in NFFS, because Rozell's Free Flight Digest is so great. It has a fine balance of indoor and outdoor modeling, plans, contest and club activity. If you haven't seen it, Sergio Montes' Free Flight Quarterly from Australia is the best yet. Sergio has entire issues devoted to one model, and plans to continue this trend. Distributing these at meetings helps raise the level of discussion several notches, though most of the cheap #\$\$%&@a still won't subscribe. Check out www.freeflightquarterly.com.
3. The other thing we are doing is carefully planning our event list to attract as many out-of-state fliers as possible. This means National Points events, FAC scale, glider, and novelty events.
4. Parallel to this, four or five of us try to attend the other clubs’ business and planning meetings. There is often questions among some of their members over us being there and speaking up, but we pay dues and come to fly at THEIR contests, so the club officers love it.
5. Also pertinent to the all-for-one approach is going digital with the newsletter. It is more work, but it can be sent to hundreds, instead of dozens, free. Bill Gowen and David Mills have done this with the Atlanta Thermal Thumber’s *Thumb Print*, and it is great! Kinko's copying and postage costs had been sinking our club treasury.
6. We have a facilitator for meetings who runs it like a corporate meeting. The club president is often a poor choice for this, and we don't even have one.
7. All of us have fallen down in getting new members. Newbies see us argue and our insular ways, and never return. Most come in by way of Science Olympiad. We should do all we can to mentor SO and TSA where possible. Check the indoor lists for new members in your area, and jump on them like a hot crawfish pie.

Hope some of these are of use to you. In truth, we have had no increase in membership, but no decline, either.

Carl Bakay

In keeping with Carls's thoughts, please find below a brief intro and survey from Andy Mitas. Andy is doing a Masters in leisure studies, and about to being his PhD. He is an avid free flighter and indoor flyer, and a heck of a nice guy. He has put together a survey to help gather the communities thoughts on the current state of indoor.

Please take the time to fill out the survey and send it back to Andy. He will compile and analyze the results, and we will present a full report in a future issue of INAV.

Greetings, fellow indoor modelers!

I'm Andy Mitas, indoor free flight modeler and student in leisure studies at North Carolina State. I'd like to year your thoughts on what you enjoy about the indoor hobby and on how it can continue to grow. In this issue of INAV, I've included a survey that I'm asking you to fill out and mail back with your answers.

I work as a graduate research assistant in the leisure studies field, essentially studying what people do in their spare time. As I have gotten to know lots of indoor free flight modelers online and in person, I've heard a huge variety of opinions on the state of the hobby. The situation is serious enough that it doesn't seem productive to me to debate whether indoor is "in trouble" or not. Instead, I think it would be helpful for us all to learn how we can market the hobby as a productive, healthy, enjoyable leisure activity - to keep current modelers involved, attract newcomers, and find and keep good indoor sites. To do that, **we need more information**. I began collecting some of this information at the Midwest Champs with a survey that I handed out to all registered participants. You can read the results of the Midwest Champs survey on <http://indoornews.com>, but first please do fill in the following survey and mail it along. **Your thoughts are very important to me**, and the more completed surveys I can get back, the better the information will be. **If you already filled out this survey at the Midwest Champs, however, you don't need to fill it out again.**

Thank you very much for your help!!!

2006 INAV Indoor Free Flight Participant Survey

In cooperation with subscription editor Tony Pavel, I'm asking you to fill out this survey to help us learn how indoor free flight is doing and how contests and programs could be run to **help the hobby**. The results will be published in a forthcoming issue of INAV. **All individual information will be kept confidential.** If you already filled out this survey at the 2006 Midwest Champs, thank you for your help - please don't fill it out again.

I'm Andy Mitas, indoor free flight modeler and student in leisure studies at North Carolina State.
919-858-9570, omitas@ncsu.edu, 116 Buckden, Cary NC 27511

1. How many years have you been involved in indoor free flight? ____ years

2. Which indoor free flight contests did you attend last year (2005)?

3. Do you belong to a local club? ____yes ____no If yes, which club? _____

4. How often do you fly for sport/trimming outside of contests? ____ times per month

5. How many indoor free flight modelers do you know who live within 50 miles? ____ modelers

6. Please rate how important each of the following were to your experience **at the last contest you attended.**

	Not Important			Very Important	
Getting a chance to fly in a good site	1	2	3	4	5
Seeing old friends	1	2	3	4	5
Meeting other free flight modelers	1	2	3	4	5
Teaching new tips or tricks to others	1	2	3	4	5
Learning new tips or tricks for myself	1	2	3	4	5
Trying to beat my own best times	1	2	3	4	5
Trying to do well in competition	1	2	3	4	5
Just being here	1	2	3	4	5
Gaining points for America's Cup	1	2	3	4	5

7. What first got you interested in the hobby of indoor free flight?

8. What kinds of programs do you think could increase participation in indoor free flight?

9. What aspects of indoor free flight do you most enjoy?

10. What is your age? ____10-25 ____26-40 ____41-55 ____56-70 ____over 70

11. What is your home zip code? _____ **Thank you for your thoughts!** Please fold the survey along the lines on the opposite side, tape shut, affix postage, and drop in the mail. Please feel free to make additional comments about the indoor free flight hobby on the back of this sheet.

tape shut here

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here
please

Ondrej “Andy” Mitas
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