

# The Flightline

Volume 31, Issue 10

Newsletter of the Propstoppers RC Club

AMA 1042 October 2001

## Editorial; Field Matters

A club field is not just an airfield it is a meeting place, a place to relax and enjoy the outdoors flying and watching others fly. Or just a place to chew the fat. It is "our" place.

It has been an unusual year for Propstoppers club fields. Chris Catania and Mike Black put in an outstanding effort to secure us a new field to replace Dallett .

Sleighton field is larger and well located near to Dallett. However it has not so far worked out as a completely satisfactory replacement as a "club field".

With a large runway, plenty of parking and complete privacy from nearby roads the potential is there. But a series of events have slowed and clouded the development and these in turn have effected the level of club activity.

First the negotiations with multiple lawyers caused the consummation to drag into late spring. This in turn caused a delay in making and executing the plans for field preparation. Although we planned to blade the surface and re-seed the farmer assured us that the Timothy grass that he had already sown would mature into an excellent "lawn". Of course that assumed a normal season of early and regular precipitation. It didn't happen and the result of this is an almost barren rough surface which, despite a number of work parties, still harbors quite a collection of rocks and is hard on our planes. It has also turned out that the placement of the runway causes difficulties in flying in the summer evening sun. The downwind turn is right there!

Then the other shoe dropped, the owners, Elwyn Institute, planned to close the school and sell the property. Our lease with the farmer is for only one year. No one knows what will happen next year. We don't know if we will have it at all much less if we can secure an extension which will enable us to make the desired improvements.

On the other hand it has not been sold and Elwyn may hold on to it for years. So we need to develop a plan which will make Sleighton meet our needs and desires in a way that we can afford, while retaining the wherewithal to establish a new field if Sleighton

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## A sad day for People, the Nation and Aviation



slips away from us.

So, what might we do if Sleighton remains our primary field? One suggestion has been to negotiate with the farmer so we can relocate the runway to prevent the summer evening sun problem.

The current runway location was selected on the basis of providing length and a level longitudinal profile. To minimize the size and therefore cost of the lease it was located towards the hedgerow from the high point of the terrain. This is why it slopes sideways towards the pits. If you can read a contour map you can see these features in the figure on page 4..

The proposal is to move the runway as shown in the figure. This runway would be somewhat level in gross terms with some waviness although if we are to believe the map it would be within ten feet of level everywhere. If we were allowed and want to spend the money this could be brought to level. It would however, require us to lease a larger tract, perhaps costing more.

*Continued on page 4*

## Pennsbury Land Trust Balloon Festival

For the second year in a row the Propstoppers were invited to display both static and flying models at this celebration in Pennsbury Township near Chadds Ford. The primary feature of this event is the hot air balloon flying. Our flying models have added a much needed attraction during the early afternoon before the balloon flying was scheduled to begin.

This year the weather was gorgeous, and the wind was moderate, which made for a fine day of flying for yours truly.

The festival organizers had again prepared a small but level runway for us to fly from and show our stuff to the many festival attendees.

As far as flying goes, the Propstoppers were the main event, as the balloons were grounded due to FAA restrictions on private flying resulting from the unfortunate events of the prior week..

There were helicopter rides just as last year, but the chopper flying did not start until near the end of our allotted time. Thanks to Greg and Lori Dugan, Al Gurewicz, and Ray Wopatek for attending and helping out.

## Rusty Neithammer

### Want to fly indoors this winter?

Do you know of a suitable venue? If you do, please contact them and ask about availability, costs and special provisions. Remember, AMA provides insurance coverage. Bring information to the meeting.

## Calendar of Events

### Club Meeting

Tuesday 2nd October 2001  
Marple Newtown Library, 7:30 p.m.

### Flying Events

7th October WASPS of Cape May NJ.  
Fun Fly Propstoppers invited.  
See Al Tamburro and report on this page.

Annual Propstoppers Night Fly  
For discussion at the club meeting.

Propstoppers Indoor flying.  
See article in this issue.  
For discussion at the club meeting.

### Regular Club Flying

At Moore and Sleighton Fields

Note; you must have a dashboard pass to enter Sleighton Field.  
First in and last out will notify the office of our presence.

Daily	10 am till Dusk
Saturday	10 am till Dusk
Sunday	12 p.m. till Dusk

## Propstoppers RC Club of Delaware County, Pennsylvania. Club Officers

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Propstopper's Web Site;

<http://www.propstoppers.org>

Check the web site for back issues of the newsletter, pictures of club events and the calendar of future events.

Pictures courtesy of Bob Kuhn and Dave Harding

## The President's Message

Fellow Propstoppers,  
Another flying season nears its end. We need to begin to look at our present situation and make some plans for next year. If we are fortunate enough to stay at Sleighton, some of us have been discussing the possibility of moving the field. Most would prefer that our backs be to Valley Road with the runway just inside the tree line. We would have early morning sun in the summer, but would avoid the afternoon and evening sun in our eyes. We could find a way to angle the field, but if the farmer stays that will most likely not be considered.

If the farmer's lease is not renewed, anything is possible. We need to try to get a handle on this ASAP. If we reorient the field it needs to be done soon, so that we can prepare and plant a runway for next year.

At Moore Field we can just continue improvements. That should at least consist of planting grass on a few rough spots and spreading a few more yards of topsoil over the uneven spots. Think about what else if anything you might want to do there.

Like many of you I have not had the opportunity to fly near as much as I would like this summer and it doesn't look like the fall is going to be much better. I am tied up for the next two consecutive weekends and have two in October spoken for already. Where does the time go?

After the tragedies of last week, we may all begin to reassess our time expenditures. I think there will be a new emphasis on quality family time. We may see heightened interest in hobbies like ours that bring fathers and sons closer together.

I sincerely hope that none of you or your families were directly affected. We will all carry this scar on our minds and hearts forever.

I know you will all do what you can to help those who are grieving and in need. We will help each other get beyond this tragedy by our friendships and common interest.

I look forward to seeing you at the field and the meeting.

Keep those wings level.

**Mike Black** 

## On The Beach and At The Shore

On 23rd September Al Tamburro again made his annual pilgrimage to fly on the beach in Wildwood, NJ with the WASP's of Cape May. This year John Sabuski joined Al as the only other Propstopper at this popular and unusual event although in the past many have attended.

The WASP's are pleased with their association with the Propstoppers and have invited us to join them for their club's fun fly on Sunday October 7th starting at 10 am. The field is located at Pennsylvania Avenue, Burleigh, N.J. about 1/10 mile South of Indian Trail. See me for details and plans to attend. <http://sport.nj.com/sport/planes>

**Al Tamburro** 

## Meeting Minutes, September 4th 2001

The meeting was called to order at 7:30 PM at the Marple Library by Vice President **Dick Seiwel**. There were 23 members and 2 guests/prospective members present.

The minutes of the July 10 and August 7, 2001 meetings, as published in the September 2001 newsletter, were approved by the membership.

Treasurer **Al Gurewicz** gave the treasurer's report with income of \$0.00, expenses of \$460.21 and a new balance of \$3360.64 reported.

### Old Business

Dues assessment to cover the increased costs associated with Sleighton Field were due as of the June 5, 2001 meeting. As of this writing, 58 members have paid the assessment. Any members who have not paid the assessment are denied flying privileges until the assessment is paid. Membership chairman **Ray Wopatek** will be contacting members who have not paid their dues assessment.

There are still a few hats available - \$6.00 – see **Al Gurewicz**.

Fuel purchase – All of the fuel has been pumped from the drum. As of this date there are several gallons left. Please see **Mike Black** to purchase fuel. The fuel is S&W, 15% nitro, 20% castor/synth. oil blend. Due to the surplus of fuel, there will probably not be a bulk fuel purchase next spring.

The Electric Fun Fly was a huge success, thanks to chairman **Dave Harding**, and also to **Bob Kuhn**, **Herman Nade**, **Mick Harris** and **Dick Bartkowski**. There were over 100 aircraft of all types. This has to have been the best club meet to date.

The Pennsbury Land Trust Balloon Festival will be held on Saturday, September 15. The organizers have asked the Propstoppers to present a flying demonstration as we did last year. Event Chairman **Rusty Neithammer** will coordinate with the event organizers. If there are enough members willing to participate, we may want to bring models for static display and have a display area. **Greg Dugan** has volunteered to run the static display. A folding table is needed. It may also help to have an announcer with a bullhorn (volunteer needed). The time for our flight demonstration is 2:00 to 4:00 PM (confirmed).

The location is at the Pennsbury Municipal Building (south on US rt. 1, past the Chadds Ford Winery and Pennsbury Antique Mall on the left, to the next light, left on Independence Way into the parking lot, tell them you are with the Propstoppers and they will direct you to the balloon field where we have a runway. See the enclosed map). Try to arrive around 1:30 or earlier so we are set up and ready to fly at 2:00.

It appears that, for the time being, Elwyn Institutes will retain possession of Sleighton School, and there will be no change in the status of our use of the field. There was discussion of relocating the runway to a site along Valley road (runway oriented parallel to Valley Road) which is a more level location than the present one.

Send classified ads for sale items or items wanted, to newsletter editor **Dave Harding**, for free publication in the newsletter.

Newsletter editor **Dave Harding** asks members to provide him with reports of events they have attended. This can be done in any way that is convenient, including a simple phone call. Pictures are also most welcome.

### New Business

The New Jersey WASP's dub again sponsors a fun fly on the beach in Wildwood, 17<sup>th</sup> and the Boardwalk, on September 23, 2001, 10:00AM to 3:00 PM.

**Bob Kuhn** discussed a proposal to create a club domain name and website. The cost to the club would be a total \$80.00 per year to maintain the domain name and website space. The new web site space would have significantly more data storage, enabling the posting of more newsletters, pictures etc., than is possible on the present free site. Also, no advertising will show when the site is viewed.

The domain name would be <propstoppers.org>, much easier to remember than the present URL. If enough members agree to forgo their mailed copy of the newsletter and instead download from the web, the savings in postage would more than offset the cost for the domain name and site hosting. The measure was approved by unanimous vote of the membership.

### Break

The 50-50 winner was **Rusty Neithammer** (share of winnings donated to club treasury).

Photos, non-digital, of the electric fun fly are needed for publication in the AMA magazine. **Al Tamburro** will talk to **Sam Nevins** to see if he has any.

**Adam Kraut** is working on a proposal for a model aircraft program/presentation for his school. This may also qualify for an AMA "YES" stipend.

There was discussion of indoor flying once a month or so. Issues include determining a suitable location and insurance coverage need to be addressed.

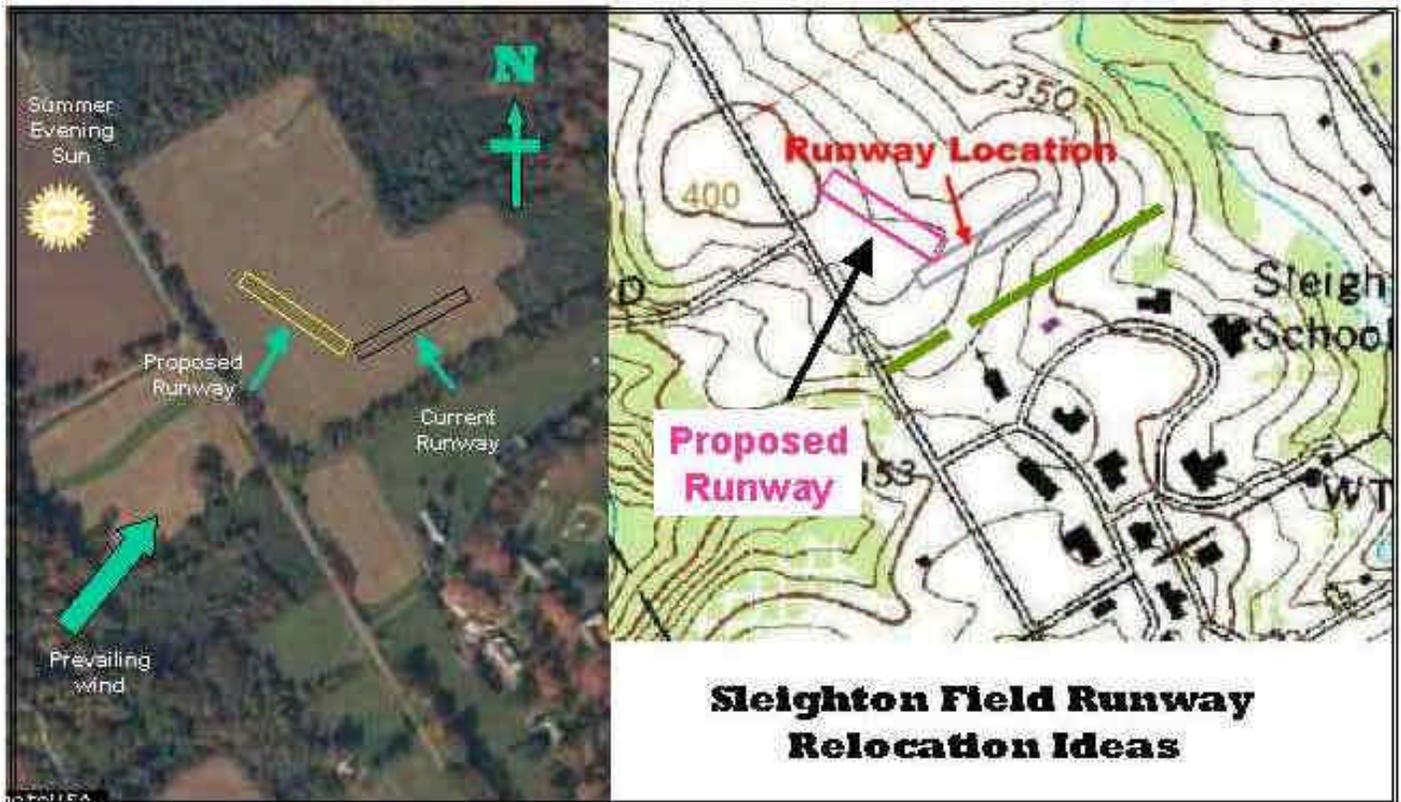
The next meeting is Tuesday, October 7, 2001. The November meeting will be Thursday, November 8, 2001, due to election night conflicts at the Marple Library.

### Show and Tell

**Al Tamburro** showed an electric drive system he put together using two inexpensive can motors from a motor supply house, and a 10 cell, 270 mah NICD pack and standard Master Airscrew props for the COX .049 engine. Al reports that this system flies a foam glider for 17 minutes.

The meeting was adjourned by Vice President **Dick Seiwel** at 8:55 PM.

**Rusty Neithammer** 



### Sleighton Field Runway Relocation Ideas

#### **Editorial; Field Matters** *continued from page 1*

Another thought is to explore leasing the whole field. The farmer did not appear to farm the field this year although perhaps his crop would have been hay! He has complained about the deer population eating any worthwhile crops. Given the uncertainty of the Elwyn situation it may be easy to lease the whole field on a year to year basis. If we did lease the whole field we could site the runway and pits exactly where we think they should be only limited by the financial considerations. One increased cost would be the mowing of the "rough" although this would only be necessary a few times a year.

The purpose of this editorial is to draw the members into this discussion, so think about what the club needs and can afford then be prepared to engage in the dialog at the October meeting.

**Moore field** has been another story entirely. The predominant crabgrass has flourished this year and grounds keeper Dick Siewell's loving attention has produced a runway and pit surface suitable for center court at Wimbledon. Moore field has a special ambiance as it is secluded, private and pretty.

All summer long some of the electric guys, Dick Bartkowski, Mick Harris and myself have been flying in the evenings. One check on the wind forecast, the calls are made and within fifteen minutes we are there. (We really ought to have a list so we could share this with more people).

There have been many calm evenings this summer and we have routinely flown our Litesticks ROG from the

closely mown runway. We have enjoyed this so much that we decided to hold our annual Electric Fun Fly at Moore.

This decision was made with a little apprehension as, let's face it, Moore field is a little tight and the hazards seem to beckon the newcomer. Not to worry, we had a most successful meet and the participants all enjoyed it, so did the rail birds.



*Flyers and spectators enjoy the flying from the superb surface at Moore Field during the Electric Fun Fly 2001*

it's hard to say this but it's a pity we have two fields as the whole club does not congregate in one place. Such riches!

**Dave Harding**



## Elexaco Matters

You may have seen us at the field or read about our exploits in the Flightline or maybe you came to our Electric Fun Fly but either way you have probably heard about Elexaco.

Elexaco is a new fun type electric competition dreamed up by Joe Beshar. The competition is to stay in the air as long as possible.

The airplane must use a specific 7.2 volt speed 400 motor, Guenther prop and battery pack.

The airframe can be of any form with the only limit being a maximum aspect ratio of eight. In this case, the aspect ratio is defined as wing span divided by root chord (not the real aspect ratio; which is span squared divided by wing area.....but who's checking).

The models may be "Old Timers" or new designs. Sometimes there is a separate class for each.

The first electric fun fly meet of the year, the Old Eagles in Hope, New Jersey, planned to hold an Elexaco contest and Dick Bartkowski said he was building a model of the 1937 Miss Trenton.



*Dick Bartkowski's  
Elexaco  
36 inch span model of  
the 1937 Old Timer  
"Miss Trenton"*

Always up for a challenge I began to think about the kind of model that would be competitive. I didn't have time to build an old timer so I thought about the most simple yet competitive design.

Now Doctor Richard Bartkowski is certainly a medical doctor but he was a Doctor of Physics first and he doesn't do anything that is not thoroughly thought out and analyzed....The physics method.

So we began an analysis of the Elexaco design based largely on the analysis methods that Dick had developed in spreadsheet form over the years.

### The Elexaco design problem

- The battery pack holds a fixed amount of energy. Experience shows that the mandated motor /prop will run for about 3.5 minutes on this battery.
- You are trying to get an airplane to fly **maximum altitude** on this fixed amount of energy (the battery).
- You want to take as long as possible to descend from this altitude; this means the **lowest sink speed**.

These are the fundamentals. The second order considerations are that you want to do this in a variety of weather conditions. We initially considered calm and windy but as we will see there are other considerations but first let's consider the fundamentals.

**Maximum altitude** is gained by minimum **weight**, maximum **propulsive efficiency** and maximum **L/D** (lift divided by drag at the climb flight condition).

The propulsive efficiency is set by the mandated

propulsion system so there is nothing there except to match the flight velocity to efficient operation of the prop.

**Minimum sink speed** is set by the **weight, wing area** and **L/D**.

### Weight

The **weight** of the motor, prop, speed controller and battery is about seven ounces. The lightweight receiver and pico servos add another one and a half ounces so the fixed useful load, as we say in the airplane business, is eight and a half ounces.

Now for the airframe. Clearly the airframe weight is driven by the design approach but it is also dependent on size. Bigger wings in the same family weigh more no matter how you build them.

So we want a big wing to reduce wing loading and thereby flight and sink speed, but big wings weigh more so you gain less altitude! A trade-off.

### L/D

The lift must equal the weight, more on this later. The drag is made up of two parts, the profile drag, how clean the airframe is, and the induced drag; the drag that arises from the lifting wing. This induced drag term is dependent on the wing aspect ratio and to a lesser extent the shape. Now the elegant part of Joe Beshar's Elexaco design rules is that he set the maximum aspect ratio at 8:1. This does two things, it puts a limit on the quest for low drag, very high aspect ratio "toothpick" wings are out, and it also matches the kind of designs found in old timers. Consequently, the maximum L/D is set primarily by the profile drag of the airframe, you want a clean model and set the aspect ratio as close to eight as you can.

But the induced drag is a function of the lift and this must equal the weight so weight appears in L/D too..

The wing area and the weight (wing loading) drive the airspeed, and for a given L/D, the sink speed.

*Bigger wings are better.*

Sink speed = K times wing loading divided by L/D  
or

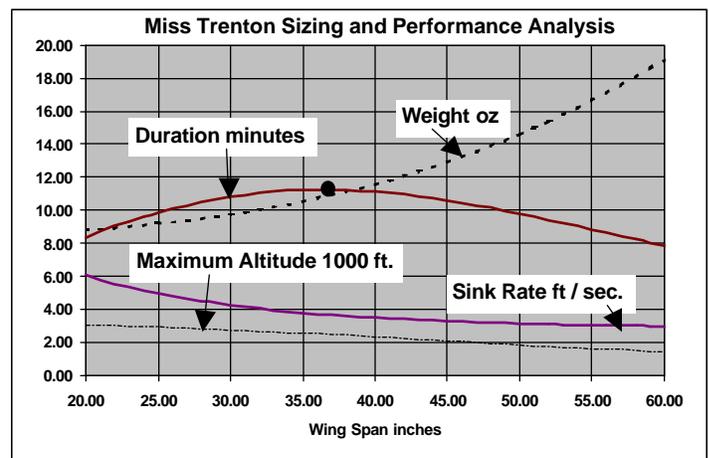
Sink speed = K times (weight / wing area) / L/D

But the wing area drives the weight.

*Bigger wings are heavier.*

**We need to solve for the optimum wing area or span.  
This we did using Dick's analysis.**

First we analyzed Dick's Miss Trenton approach.



The analysis showed that the optimum wing span for a plane with an L/D of 6 and airframe weight of 5.5 oz (in a 48 inch wing span) is about 36 inches. This design would have a weight of 11.5 oz, would climb to 2500 ft and glide for 11.5 minutes.

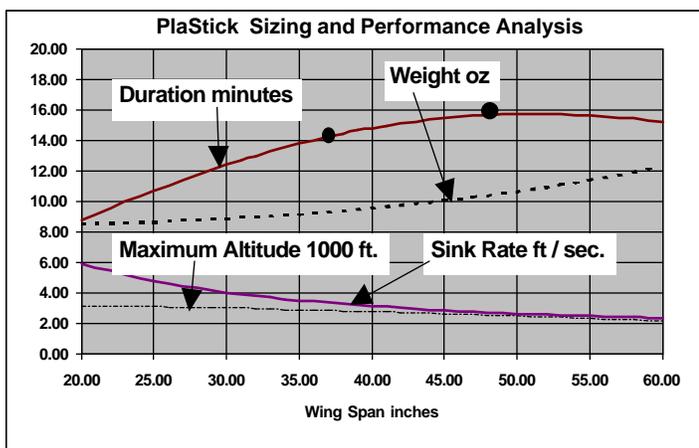
This is the airplane that Dick built and the actual still air performance approximates these predictions. However, in arriving at these positions we observed that the slope of the solution curve was quite flat. A difference of several inches made only small changes to performance and Dick argued that most real world contests did not take place in still air. With some wind and turbulence he argued that a smaller airplane might be more stable.

**High Tech**

The airplane I eyeball designed is a very light carbon stick pylon duration style ship with a foam wing. Persuaded by Dick's argument, I made two wings, one at 48 in span and a second wing at 36 in span with the only change being the 12 inch span center panel. Now I could fly in still and windy air. The large wing weighs 1.6 oz and the smaller 0.9 oz. The total weight of the larger ship is 10.5 oz.



Both models flew very well and pretty much as predicted. The lighter new designs climbed higher and the lower wing loading gave them better decent performance.



However our first surprise, which is significant, is that these models are effectively out of sight after a one minute climb. They would most certainly be out of sight in three and a half minutes!

Fortunately, by the first contest the organizers had realized that they needed to limit the climb time and it was set at

two minutes. The rules state that when the motor is shut off it cannot be re engaged so the one minute to out of sight problem requires that you burn altitude for one minute once you reach the maximum visual altitude. You certainly don't want to shut off at one minute because the powered flight counts.

The second problem which mostly effects my "efficient" ships is that you can't see to fly the transition from power to glide so a less stable plane can lose a good deal of altitude stalling and spinning in the transition until you can see it to effect control. This happened in almost every official flight of my new design whereas Dick had an airplane which he set up to make a good transition just by clicking in several degrees of pitch adjustment on power shut off.

One reason for my problem is that in order to make a theoretically efficient wing I had designed the planform to approximate the ideal ellipse. Good theory but I neglected to pay attention to Dr. Reynolds. The tip chord at 2.5 inches in cruise has a Reynolds number under 30,000 and this is below critical for the kind of airfoil I used; SD 7032. The consequence of this is a tendency to tip stall. This further exacerbates the stable transition from power to glide. Dick's Miss Trenton has a constant chord wing with round tips. It works well.

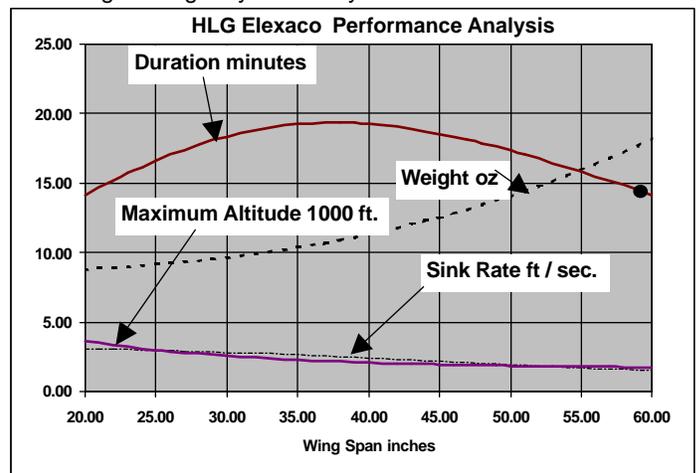
Those of you that flew free flight in "the old days" will be rolling your eyes as these youngsters discover this stuff all over again but ces la vie

So Dick won the Eagles meet and I won the Propstoppers meet but at the NEAT fair we had a different solution to contend with.

**Different Approach**

Our friends Bill Groft and Dave DeGroute had modified hand launched gliders into Elexacos. These models have a 1.5 meter, 59 inch, span and are naturally somewhat heavier than the smaller models we have been using. But theory says these models are non optimum! They are too heavy and won't climb high.

Well hand launched gliders are thrown only to just over 100 feet and the Elexaco powerplant will drag them much higher than that. So-what you say, well, these models are very efficient gliders and although they are heavier and bigger they have a very high L/D and because of the L/D and low wing loading they have very low sink rates.





*Ed Berchtold launches Bill Groft's HLG at the Propstoppers Electric Fun Fly*

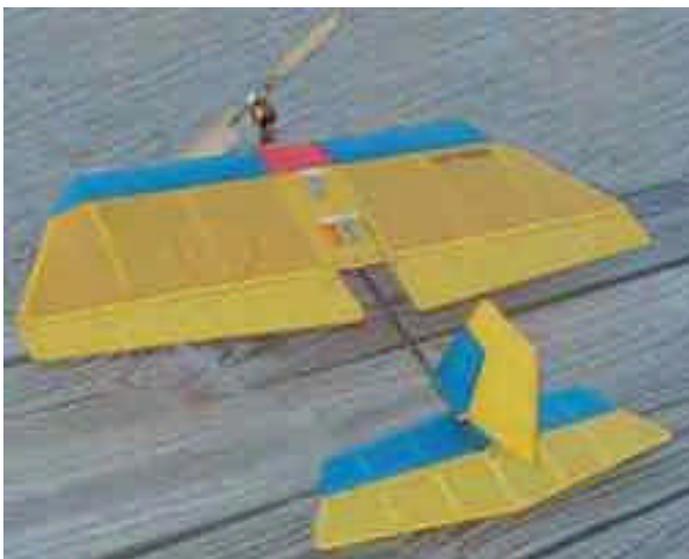
Nevertheless, in still air they probably have lower performance than our planes, and this proved to be the case in the first rounds at NEAT. Both Dick and I had better times than Bill and Dave but in the last round Dave did what hand launched gliders are designed to do; he found a thermal that allowed him to "max out" at ten minutes, 35 seconds more than Dick, who finished second.

So there is another solution to the Elexaco design puzzle, a design with low descent rate to ride weak thermals.

But wait, I did nothing to clean

up my airframe, could I match the L/D of the HLG airframes? Would it weight much more. Look at that high L/D performance with a smaller wing..... More to come.

**Dave Harding and Dick Bartkowski**



*Fast Freddie Park / Indoor Fun Flier*

**Indoor RC?**

There has been some discussion of establishing an indoor RC activity for the club. Sounds like a good idea to me. Are you thinking about joining us? You are? Good, what are you going to fly? Haven't done anything like this before? Don't want to invest a lot of time and money only to fail? Consider the Litestick and its components as a basis for your venture.



*Dave Harding's Snoopy's Camel Litestick version, lost the LH roundel in combat with Dick's Bartkowski's Red Barron.*

The Litestick is made by GWS in Taiwan. It is sold by a variety of companies with various names including the Picostick by Multiplex.

Dick Bartkowski and I have been enjoying them outdoors when the wind is fairly calm and I hear that they make excellent indoor models.

First, they are inexpensive, usually between \$25 and \$40. They come complete with motor and prop so all you need is a receiver, two servos, a speed controller and a battery. The GWS receiver is becoming the standard for park and indoor flyers, it weighs only a few grams and costs less than \$30. The pico servos, Cyrus (GWS) C-10's cost about \$25 and a batteries can vary from \$15 to quite expensive depending how long you want one flight to last. I use the Castle Creations Pixie speed controller but GWS makes one of these too for about \$25.

The motor in the Litestick is a special unit that includes a gearbox. The standard model comes with a 5.86:1 ratio but the motors are available with six variations up to 11.7:1. There are a range of props to suit these also. Motors cost \$11 for the plain bearing variety to \$20 for ball bearings!

And the really good news is that all of the parts I have discussed above may be used over and over in a huge variety of indoor RC airplanes.

The GWS motor plugs directly onto the front of a stick, usually the fuselage main member. You can easily build planes with different size and shape around this component. You can use sheet balsa or meat plate foam or even build up the aer-surfaces (as we say in the industry). The lighter you build em the higher reduction gearbox and larger prop you can use. Build a four foot span low aspect ratio machine and fly at a slow walking pace.

Or perhaps you want to build a profile Sopwith Triplane with sheet surfaces covered with tissue that you printed on your computer. Imagine, scale the color three view and print it directly in color. Instant credibility.

Of course a full house fun fly is possible with these components, just like Bill Groft's Fast Freddie at the fun fly.

Of course this all depends on getting a hall in which to fly and the size of the hall will affect the kind of airplanes that can be flown there. So get on the horn to the local folks and check out that gym.

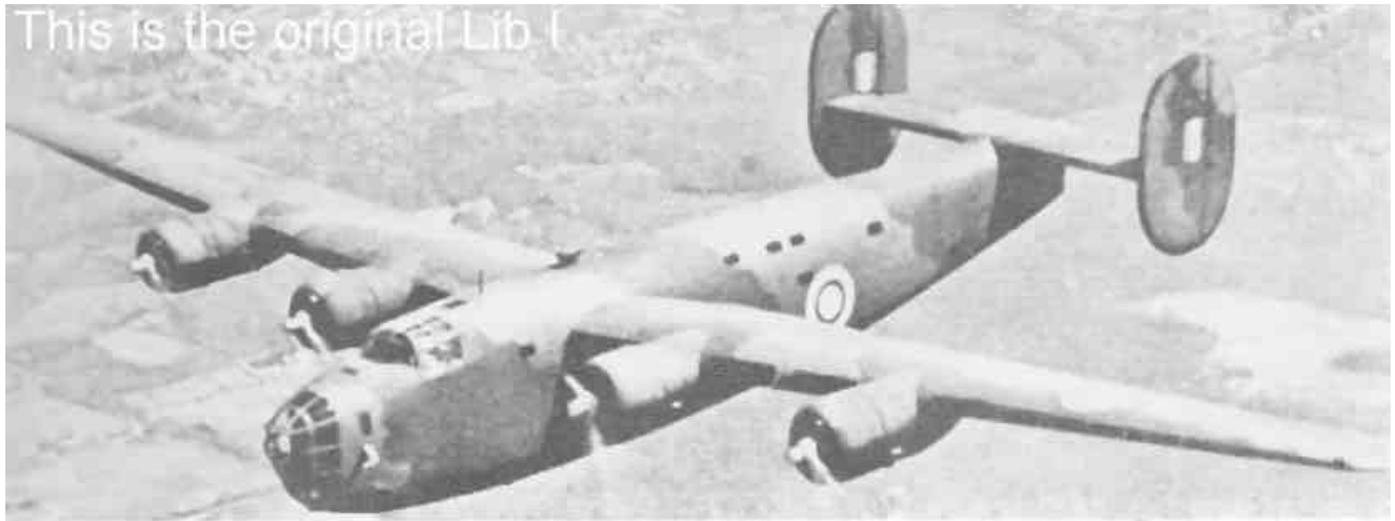
Ready, set go get 'em.

**Dave Harding**

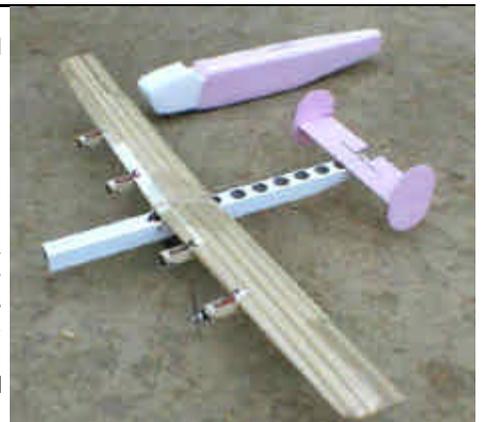


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# Propstoppers R.C. M.A.C



**B-24 Progress.** Several club members have asked about the four motor B-24 that I am building so I thought I would show a few pictures on the progress. Many of you have seen me fly the two motor Bristol Freighter at our fields. It is a 60 inch span, all pink foam model powered by two 7.2 volt speed 400 motors running on seven 1700 mah Nicad cells. The B-24 is a sort-of upsized version of this design approach at 80 inch span with four speed 400 motors. Since the B-24 is rather short coupled and has a relatively small tail I thought I would build a "test horse" to try it out. Shown here is the test horse which uses a foam glider wing of 76 inch span and a drain-pipe fuselage. The actual B-24 fuselage is shown in the background. One design feature of the Bristol is a soft EPP foam nose. It has saved the model many times as I have learned to fly. I can't decide whether to use it on the B-24. I suppose eventually you design them to fly not crash. Don't think I am there yet. **Dave**



*Four speed-400, 76 inch span B-24 experimental flying "horse".*

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