

The Flightline

Volume 31, Issue 12

Newsletter of the Propstoppers RC Club

AMA 1042 December 2001

Editorial - The Indoor Season

Well, they did it. With the efforts of Mike DiDomenico we have a flying site for four evenings this winter. The first is on Friday December 7th.

What to do, you say to yourself! Well, there are a multitude of options from simple hand launched gliders from the dime store, to a wide variety of rubber or electric powered free flight models and of course the newly emerging flock of indoor and park flyer RC models.

I wrote about the Lite stick and its low cost, light weight propulsion system in the last edition of The Flightline. In this edition I examine the suitability of this model for flying in the indoor gymnasium that we will use.

The basic requirements for a successful indoor model is that the wing loading is low enough to allow for controlled flight in the space available.

What is described as the most successful indoor RC meet of all time was held in conjunction with the Southwest Aeromodeling Conference this spring. It is described in some detail in the on-line magazine "Microflight" This article details some of the great variety of models that were flown:

<http://www.rcmicroflight.com/jul01/index.asp>

Agenda for December 4th Meeting

- Approval of November meeting minutes
- Finance report
- Membership report
- Field search and Sleighton status report
- Indoor flying plans
 - Directions and Time
 - Delta Dart Sale
- Club Banquet?
- February Auction Plans
- New business
- Show and tell

INSIDE THIS ISSUE

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The Litestick is available from many sources under a variety of names. All are made by GWS in Taiwan. They also make the receivers, servos and speed controllers, which are ideal for indoor and relatively inexpensive.



Dick Bartkowski's fleet of simple rubber powered indoor free flight models including an AMA Delta Dart, a great flying perennial favorite. The club will have a few at the next meeting.

Calendar of Events

Club Meeting

Tuesday 4th December 2001
 Tuesday 5th February 2001 7:00 PM
 --Annual Club Auction
 Marple Newtown Library, 7:30 PM.

Flying Events

Tinicum School – 6:30 – 8:30 PM

Friday December 7, 2001
 Friday January 4, 2002
 Friday February 1, 2002
 Friday March 1, 2002

Directions - South on 420 – left on 291 – left at
 first light – right at 1st STOP (Seneca) – 3-4 Blocks
 on left

Regular Club Flying

At Moore and Sleighton Fields
 Daily 10 am til Dusk
 Saturday 10 am til Dusk
 Sunday 12 p.m. till Dusk

Propstoppers RC Club of Delaware County, Pennsylvania. Club Officers

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Propstopper's Web Site;

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

Mike Black

If you weren't at the meeting the other evening, you missed a good one.

Please read the minutes carefully for all of the information about committee appointments and upcoming events.

Thanks to Mike DiDomenico, the Tinicum Recreation Board, and the Interboro School District we have an excellent facility for our four indoor fun fly events. Dave Harding, Dick Bartkowski, and Mick Harris have volunteered to organize the events. Mark Berkmeier and Al Tamburro have volunteered to help thus far. Please plan to attend these events. We have had a great time in the past with this type of activity. I am awaiting the insurance certificate from AMA to finalize the deal.

Please note that the January meeting date is up in the air at this time. We hope to finalize it by the December meeting. As a result of that we will hold the annual auction/sale at the February meeting, which will begin one-half early (7PM) to allow sufficient time for the auction. Last years event was fantastic, with a wide variety of planes, kits, motors, hardware, radios, etc... Start lining up those planes that are in the attic and those items you plan to sell. One man's trash is another man's treasure.

I saw many members out at Sleighton Field the last two weekends. It was very enjoyable to get back out and fly again after a two-month hiatus.

Hope to see you out there often and at the indoor events. Keep building them straight and balanced.

Mike

Election Results

Here are the lucky winners in the Propstoppers elections of Officers 2001 / 2002.

From left to right Membership Chairman Ray Wopatek, Secretary Rusty Neithammer, Treasurer Al Gurewicz, President Mike Black and Vice President Dick Seiwel.

Wish them luck and support them in the coming year.



Meeting Minutes

November 8, 2001 Meeting

Vice President Dick Seiwel called the meeting to order at 7:30 PM at the Marple Library. There were 24 members and 1 guest present. The minutes of the October 2, 2001 meeting, as published in the November 2001 newsletter, were approved by the membership. Treasurer **Al Gurewicz** gave the treasurer's report with income of \$116.00, expenses of \$874.41 and a new balance of \$2267.46 reported. Al noted that there are still club hats available - \$6.00 each. The next meeting is Tuesday, December 4, 2001.

Old Business

The 2002 budget proposed during the October meeting was approved unanimously by the membership.

Nominations: None were proposed from the floor, so the nominations given during the previous meeting were accepted by acclamation, as there was only 1 candidate for each board position. The 2002 board is:

President:	Mike Black
Vice President:	Dick Seiwel
Secretary:	Rusty Neithammer
Treasurer:	Al Gurewicz

Field News: The Sleighton property is under agreement of sale to a developer, thus, we will need to find a new field. Field Search chairman **Chris Catania** is working on several leads, but there is no definite news yet. If any members have any leads of their own that they would like Chris to follow up, please contact Chris and he will investigate. Chris expects that it will be two years before any construction begins at Sleighton, and he will try to get an agreement for our use of the field until then.

Indoor flying: **Mike DiDomenico** advises that we can use the gym at Tinicum Elementary School, and the schedule is for us to hold indoor flying sessions on the following Fridays – 6:30 to 8:30:

December 7
January 4
February 1
March 1

Directions to Tinicum Elementary School: I-95 north to the Essington exit, go to the first light and turn left onto 291 (Industrial Highway), go to the next light and turn left on Jansen Avenue, go to the first stop sign and turn right on Seneca, go three blocks to the school on the left.

Members who have been following other leads for indoor flying sites should continue to do so, as more available sites is always a good thing.

Dave Harding has worked out the logistical details for delivery of future newsletters via the Internet and will be contacting those members with Internet access to advise of those details. It costs about \$12 per year per member to mail the newsletter, so eliminating some of the mailing will save substantial expenses. It was proposed that, those members electing to receive the newsletter via the web for the year 2002 will receive \$10 off of their 2003 dues.

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 January meeting date is tentatively scheduled as Tuesday, January 8, 2002, as the first Tuesday in January 2002 is the first, New Year's Day. Appointments for 2002

Safety Officer:
Field Marshall
Membership Chairman:
Coffee Chairman:
50-50 Chairman:
Field Search Chairman:

Jesse Davis
Al Tamburro
Ray Wopatek
Bob Crowell
Al Tamburro
Chris Catania

Banquet: **Mike Black** had contacted members by email during the past week proposing a revival of the yearly banquet, perhaps in a buffet type of venue to lower the cost. The membership is asked to consider whether or not they would like to attend in preparation for continued discussion of this topic at the next meeting.

Propstoppers List serve: **Dave Harding** has set up a list serve account for the club and has subscribed all members who have provided an email address to the membership chairman. The list serve enables one, by sending just one email to one address, to post a message to all subscribers to the group. This will make it easier for members to broadcast relevant information to club members.

Meeting Speakers: Anyone wanting to present a topic at a club meeting is encouraged to contact **Dave Harding** or one of the board members so that advance notice of the presentation can be delivered to the membership, hopefully encouraging better meeting attendance.

Auction: Due to the uncertainty of the January 2002 meeting date, it was decided to hold the auction during the February 5, 2002 meeting as has been done in the past. Note that the February meeting will start at 7:00 to allow more time for the auction.

Adam Kraut is still in the process of organizing a model airplane club at his school, and does not have any real news to report yet.

Breakfast Club: There was considerable interest in having periodic pre-flying day breakfast meetings at a local restaurant, or to just get together when the weather is prohibitive to flying.

Break

There was no 50-50

Show and Tell

Jesse Davis showed his Clancy Aviation Stagger Bee biplane. It is in the final stages of construction. Jesse added lightening holes in the fuselage and changed the horizontal stabilizer/elevator construction from solid balsa to built-up construction. Although the kit provided Mylar covering, Jesse used Silkspan and did a very nice covering job. Intended power is the Graupner 480 geared on 8 cells.

Adam Kraut showed his Zagi 400X, which has been seen many times at the field and with which Adam best all comers in the combat event at this years Electric Fun Fly. He has redone the tape covering and made many repairs, but it still gets 10-minute flights. Adam uses a Hitek Flash 5 radio, and a RC Dymond Supersmart charger. There is a lot of Zagi information available on the Zagi forum on Yahoo.

Vice President Dick Seiwel adjourned the meeting at 8:35 PM.

Rusty



*Jesse Davis with his
Stagger Bee*

Indoor Models - Construction

Light construction is mandatory for indoor models. When I first saw experienced flyers indoors I was surprised at the flimsiness of their models. Those of us with outdoor experience would think that these would last for one flight before they were destroyed. In fact they were very robust and held up for years. That is because the planes were specifically designed for indoor conditions. Indoor flying has a whole new and different set of constraints and rules. Let's list the differences.

Indoor Constraints :

1. Space is very limited. There are 4 walls and a ceiling.
2. There is no wind.
3. The floor is flat and hard.

Indoor Flying Problems:

1. The plane has to turn constantly to avoid the walls.
2. The plane has to fly slow enough to allow turning in the allotted space. This is very slow.
3. The plane cannot climb too much or it will hit the ceiling and may get stuck.

Indoor designs that work:

1. Low wing loading for slow flight.
2. Light construction almost flimsy.
3. Straight construction – warps are easy in light wood.

Factoid – A light model flying slowly does not have enough momentum to break in a collision or landing.

Wing Loading

Wing loading is the amount of weight that a given area of wing has to carry. It is directly related to the speed that a plane flies. A Boeing 737 flies at over 100 pounds per square foot and travels at 500 mph. One of our R/C models is typically 1 lb/SqFt and flies at 30 mph. For indoor the loading drops another order of magnitude.

Indoor R/C models are often 2-4 oz/SqFt (0.5-1g/SqIn); freeflight are 1-2 oz/SqFt (0.25-0.5) while superlight contest duration models can be ½oz/SqFt. For small light models the grams per square inch measure is often easier to measure.

The loading determines flight speed. 2 oz/SqFt – 11 feet/sec, ½oz/SqFt – 5.5 feet/sec. 8 –12 feet/sec is comfortable for indoors. You can calculate the flight speed from the loading:

Square root of Lb/SqFt x 1000
 Square root of oz/SqFt x 60
 Square root of grams/SqIn x 300

Multiply then take square root on a calculator or in your head.

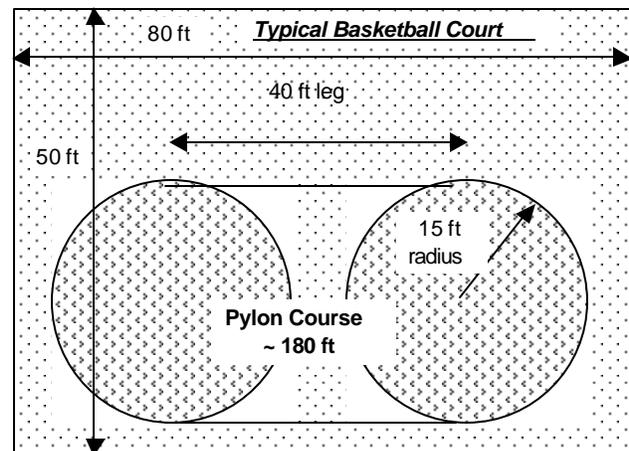
All of these formulas give the flight speed in Feet/Seconds.



Dan Kreigh's IFO (Indoor Flying Object) is an example of an indoor aerobatic R/C plane with light loading. The IFO is 33-inch wing span, weighs about 7 oz and is powered by a Speed 280 with a gearbox. From our formulas it should fly at around 13 feet/sec. It is quite agile and has been impressive in indoor sites.

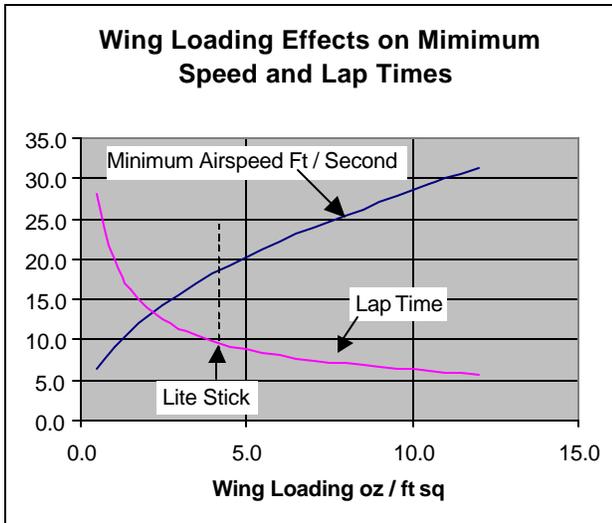
Dave's Indoor Analysis

Let's examine the factors involved in a successful RC model for our meet. First we must define the size of the "field". This is my guess:



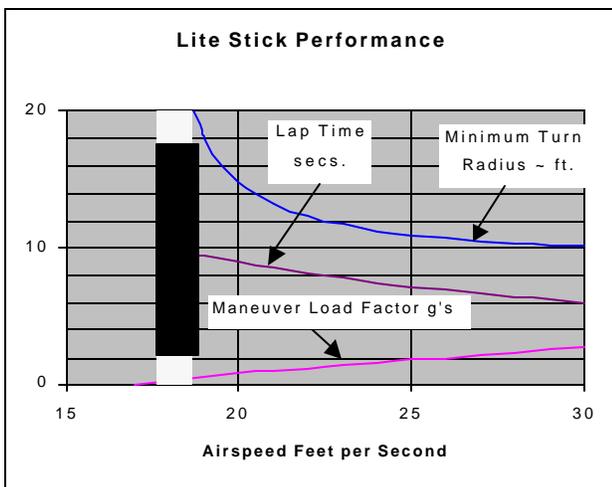
Now to fly a pylon course, whether you are racing or not, you must have adequate time to handle the control inputs. This depends on the flight speed and maneuver performance. The minimum flight speed and the maneuver performance are determined to a first approximation by the wing loading as we pointed out in the earlier discussion.

A LiteStick has a wing 36"x6.5". It weighs about 5 oz without batteries; it can weigh between 6 and 8.5 oz fully loaded. For indoor the lightest is best as there is no wind, grass or tree to contend with. Look at its performance:



Maneuver performance or the ability to turn is also a function of wing loading and airspeed. Here we can see the maneuver performance of the Lite stick. The minimum flight speed is about 18 feet per second at which point there is no maneuver capability unless you increase speed or loose altitude to get some g force into the turn. As speed increases the available turn radius decreases rapidly then stays somewhat constant although the g's experienced increase with the square of the speed.

This suggests that a standard Lite Stick will fly the pylon course in less than ten seconds with maneuver to spare. Naturally, if you use a lighter battery pack or increase the wing area it can be flown slower. A wing span increase is an easy modification although the "hot shots" will probably go the other way; reduce the wing area as they did at the SWA meeting.



So now that you are excited about the prospect of indoor flying, make your plans. Mike will have 2 full kits for AMA Delta Darts and 15 partial kits that only need covering. These will go for the bargain price of \$1.00. These are rubber powered and capable of flights near 1 minute. They have only 11 glue joints plus covering and go together in less than an hour.

Try it and learn 2 lessons. Indoor free flight is fun and not as easy as it looks to do well. The more you try the better it gets.

Dick Bartkowski and Dave Harding

Continued from back cover-

Shots of the launch of the B-24 testbed. Four motors were revving and pulled the bird skyward.

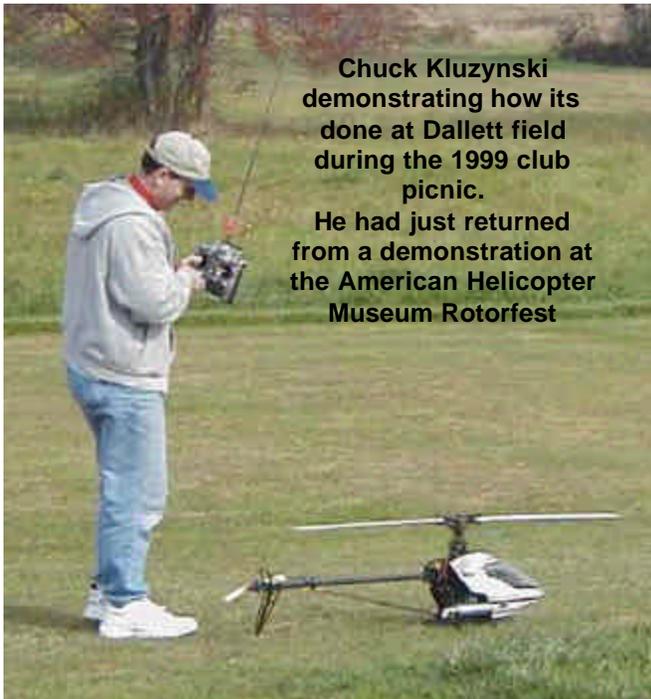


Reaching takeoff speed the plane takes to the air.

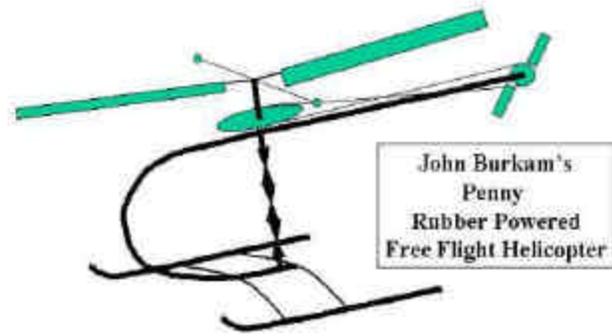


See back cover to see what happened to Mik after this. Flight is hazardous not only to the plane.

Helicopters at the Propstoppers



Chuck Kluzynski demonstrating how its done at Dallett field during the 1999 club picnic. He had just returned from a demonstration at the American Helicopter Museum Rotorfest



The next model John built was another single rotor design with a belt driven tail rotor, but larger and powered with a geared Cox .049 motor. Now this was not just a scaled up version of Penny because, as a free flight model you needed to solve the problem of what to do when the engine quit. John made a simple overrunning drive mechanism that changed collective pitch automatically when the engine stopped. This allowed the model to autorotate to the ground for a soft landing.

John finished this model in the spring of 1965 and first flew it in my backyard. It initially had a limited flight capability, just hovering close to the ground. Subsequent flights were made in the fields of what is now Ridley Creek State Park. There the model gained greater altitude but still wasn't balanced. Flights would start in a slight hovering climb then tip into forward flight where the stability caused the model to pitch up, yaw 180 degrees and dive back towards the ground. The same stability factor, which caused the initial upset, would then cause it to pitch up and swap ends again and so on until it would hit the ground. Mostly this was a balance problem that John fixed.

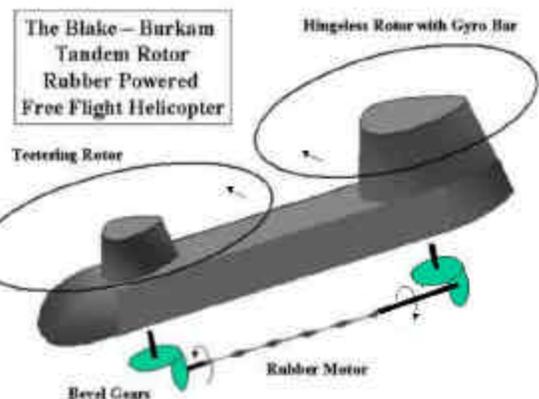
We are blessed with such diversity in our club. We have many "old time" flyers who can count their time in the hobby in large fractions of a century as well as fresh young folks who are dipping their toes for the first time and everyone in between. With this basis comes the tremendous diversity of our hobby. Many come from the early free flight and control line fields and some have their roots intertwined with the very birth of practical RC. Others are expert in a relatively new form of our hobby; RC helicopters.

In my earlier days with Boeing I was privileged to be among an incredible group of modelers who also happened to be leading helicopter technologists. Indeed, I began my career working with Ed Glatfelter Sr. who had just finished and flown his second full size helicopter.

Two others stood out; they were John Burkam and Bruce Blake. These guys were building and flying (in the design office yet!) real shaft driven helicopter models, not just Chinese tops (the two rotor rubber band toys). Now to really comprehend these feats you must understand that most "real helicopters" are inherently unstable (even today). This means that either the pilot must continuously make correcting inputs to the controls or they must be electronically stabilized. John and Bruce built free flight helicopters that were stable!

Among the models I remember are some that you will too. John built a single rotor rubber powered helicopter with a belt driven tail rotor. It flew beautifully indoors or out. You know it as "Penny", John's first daughter's name. This model has been available commercially for years yet you never see his name on it.

The second astonishing model was a rubber powered tandem rotor model, just like the Chinook. It regularly flew across the engineering floor as we worked. An amazing achievement as both the Chinook and Sea Knight are unstable. The guys solved the problem by putting a teetering rotor on the forward end and a hingeless rotor with a gyro bar on the aft end. This resulted in both pitch and roll stability. The drive had a rubber motor in the fuselage, which drove a bevel gear at each end thus driving both rotors with the same torque. A large aft fin provided directional stability.



But now was time for the Chicago Nats that we both attended. In those days there was a contest for free flight helicopters. All of the contestants flew the pinwheel type model, where a motor, equipped with a normal propeller, is mounted on a large rotor pointing up. You start the motor and the prop spins one way and the rotor and motor spin the other way. This is actually quite stable but nothing like a real helicopter. John's model was truly unique at this time, a real helicopter!

We arrived early in the morning to make the first of three attempts. The competition was for duration of flight. The first flight resulted in the model just sort of hovering at low altitude for a short while whereupon it settled into the ground. Thinking about this we realized that the weather was a factor. It was in the low 90's so the motor was not putting out the same power as in Philadelphia.

It seemed to be lugging. We were not able to change the gear ratio so I suggested that we clip 1/2 inch off each main rotor tip. On the second flight things were much better, the motor seemed to be more on song and a greater altitude was reached but still it eventually settled back to ground with the motor still running.

By this time John's unique model was receiving some attention and Ed Sweeney, who had just acquired American Modeler magazine, was asking John if he could buy the design for publication. John said he would sell it and Ed. stood by to watch the third and final attempt. Well, although I didn't then know the racer's credo "if a little is good then more is better", at least I practiced it. So we cut another 1/2 inch off the rotor.

This time the flight was superb. The model hovered away from a hand launch and transitioned into a slow forward flight to about a hundred feet altitude. Eventually the engine quit but instead of a transition to autorotation the rotor just quit and the model spiraled vertically to ground.

"Does it always do that!" said Sweeney, "no that is the first time it did it" said John. Of course he didn't tell him that it was the first time it had reached sufficient altitude to run the fuel out!

Despite this minor setback AM did publish the design although I don't remember the name of it.

Following these successes in design and construction of stable lightweight helicopters John turned his attention to RC. Here was a guy with almost all the attributes to succeed. He was a leading rotorcraft technologist; he really understood the aerodynamics, stability and control at the fundamental level. He was also an accomplished machinist, a vital skill because these were no balsa and tissue models. John made every part of his helicopters including the swashplate bearings.

Now the experts will tell you that stable is not necessarily controllable, indeed much of the early fixed wing experimentation was to find the right balance. Boeing's original airplanes were very stable but not very controllable.

So John built and attempted to fly his early RC helicopter creations with little initial success. We all know how hard it is to crash the commercially available RC helicopters and put them back together, imagine, if you had to make all the replacement parts from scratch! Now John was not an RC flyer, he had no particular skills in this area so for a while I had him convinced to let Gus Geissinger fly it for him. However, Gus found it difficult to fly and John was dispirited to fix the effects of Gus's learning. Nevertheless, John was having some success and this resulted in publication of his work and the interest of others. And as so often happens in life others saw the art of the possible and ran with it. As I remember Dieter Schuleter(sp?), in Germany, corresponded with John and launched off on his own to build the first commercial RC helicopter. The rest is history

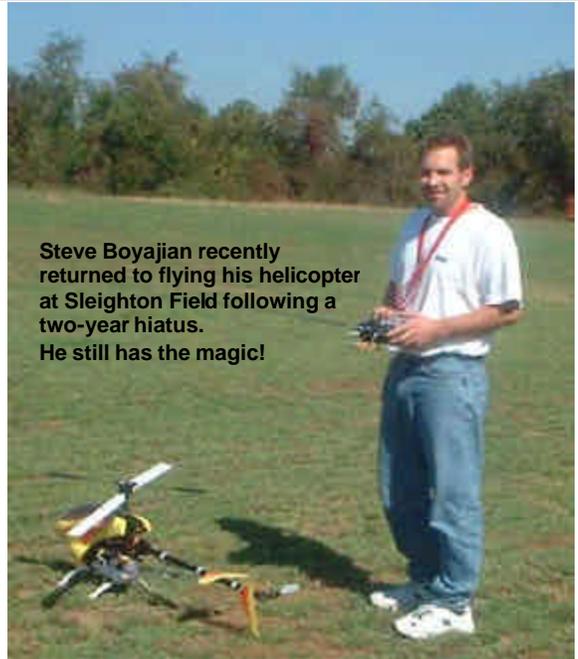
John's last great work was an RC model of the tilt rotor V-22. He designed and built it but I don't think it was ever flown.

I believe few in the World-Wide RC helicopter community know the debt they owe John Burkam. His efforts are largely forgotten, all the more shame because John died a couple of years ago.

But it is John's legacy that drove me to write this piece. We have a flourishing very skilled group of RC helicopter flyers in our club and they have been out to Sleighton field or at the club meetings recently.

Chuck Kluzynski, Steve Boyajian, Joe Scavitto and Marty Bakalorz regularly fly at our fields. They are all super pilots.

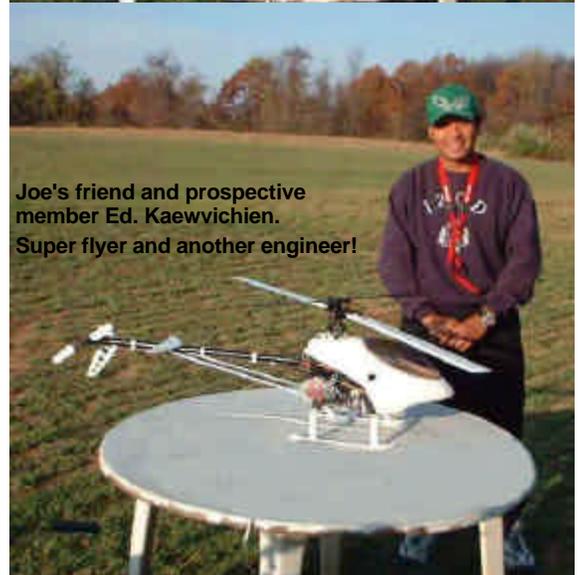
Dave Harding



Steve Boyajian recently returned to flying his helicopter at Sleighton Field following a two-year hiatus. He still has the magic!



Joe Scavitto takes advantage of the fine November weather at Sleighton Field. Another "Ace".



Joe's friend and prospective member Ed. Kaewvichien. Super flyer and another engineer!

Dave Harding – Editor
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Propstoppers R.C. M.A.C



*Four motor flight at Moore and Sleighton Fields. Al says it's a club record!
Note that even hand-launched models and launchers suffer from the surface roughness.
Mick Harris launches Dave Harding's B-24 propulsion and control test horse
Beautiful flying weather on 18th November. (More on Page 5)*

Membership Renewal For 2002

Membership renewal for 2002 is now due.
You can renew by mail or at the club meetings in
November and December.
Dues \$60 plus field assessment of \$20 = \$80.
Discount if paid by January meeting \$5

Send a check to:

Ray Wopatek
1004 Green La.
Secane, PA. 9018
Please enclose a copy of your current A. M. A.
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stamped self addressed envelope.**
Ray Wopatek Membership Chairman

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