The Flightline

Volume 35, Issue2 Newsletter of the Propstoppers RC Club AMA 1042 Feb 2005

President's Message

Dear Fellow Propstoppers,

The Propstoppers Annual Club Auction/Sale is February 1st. The meeting has an early start time of 7:00pm to allow time for the auction. Please arrive early if you have items to sell and to allow time to setup.

The Propstoppers yearly club dues will also be collected at the meeting for those who have not yet paid. The 2005 club dues are $60 for the year, please bring you 2005 AMA card.

Well it has gotten very cold very quickly. Good news is that it gives us all time to build our new favorite model and/or provide that maintenance on our existing models. If you building something new or have something you are proud of, please share it with us at next month's meeting for show and tell.

Stay warm,

Steven Boyajian, President

Agenda for February 1st Meeting
Marple Newtown Library, 7:30 pm

- Approval of January meeting minutes
- Membership Report
- Finance Report
- Flying Field Issues
- Club Auction

INSIDE THIS ISSUE

Editorial; Get Involved

The first thing our newly volunteered club president did was to ask for help in our most crucial task; finding a new field. Shamefully, his request was met with almost deafening silence. A couple of people, Dave Bevan and Jim Barrow had volunteered before but nobody else even whimpered. Actually, from what I heard, Steve was only asking for a volunteer to do the first simple task of assembling a flyer that could be given to prospective landlords during our search. This is not a big task, vice president Dick Seiwell has done it several time to support his continual trolling around the county. The task can be as simple as copying the home page from the club's web site and adding a couple of pages from the AMA web site. But that is not the point, members didn't even ask for more detail on the task.

Even if this task had been accepted there remain many others in pursuit of a new flying site where we can all fly.

I personally believe what we need is for one individual to layout an overall plan depicting all the possible tasks then we need to hold a meeting of those who just may do something. This is the time to flesh out the tasks a little more so individuals may begin to see small tasks they may be willing to accomplish. This would be a continuing process where the members may meet, say once a month to share notes and expand or focus the plan for the next month.

If we are to find a new field it will necessarily involve a whole group of members, each doing a little to help. Are you ready to join up? Let's give our new president a boost and help us too.

Dave Harding

Club Auction
Come Early
Stuff at 6:30
Meeting at 7:00

Scheduled for Tuesday, February 1st The club business meeting will start at 7:00 PM, and will be abbreviated so the auction can start at 7:30 PM.

There will be no show and tell this month.

Al Tamburro will again grace us with his auctioneering skills, and Al advises that the auction will be conducted in the same manner as in past years, that is:

Sale table – Item sale price marked on tag – 5% of sale price goes to club

Auction table – No reserve – 5% of sale price goes to club

Items placed on sale table and subsequently auctioned – 10% of sale price goes to club.

So, go right now to the workshop and dig out the stuff you really don't need so you can share it with us in the auction

Calendar of Events

Club Meetings

Club Auction 7:00 pm
Tuesday 1st February 2005
Marple Newtown Library

Tuesday Breakfast Meeting
The Country Deli, Rt. 352 Glenn Mills
9 till 10 am. Just show up.
Flying afterwards, weather permitting

Flying Events

Indoor Flying at Tinicum School 7 – 9pm
Friday 4th February
Friday 4th March

Regular Club Flying

At Christian Academy
Weekdays after school; 3pm till dusk
Saturday 10 am till dusk
Sunday, after Church; 12 pm till dusk

Note; Flying must be done in accordance with the agreement forged by Vice President Dick Seiwell Specifically, only electric powered airplanes. Beginners using due caution and respecting club rules may fly GWS Slow Stick without instructors.

Propstoppers RC Club of Delaware County, Pennsylvania. Club Officers

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Propstoppers 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.

Minutes of the Club Meeting, 4th January 2005 at Marple Newtown Library

The meeting was called to order at 7:30 p.m. by President Steve Boyajian.

Roll call taken by membership chair Ray Wopatek showed 28 members and 1 guest present.

The minutes of the December meeting were accepted as published in the newsletter.

The club treasurer Jim Barrow noted that our funds were transferred to a checking account and a current report was presented.

Old Business:

Dick Seiwell noted that our official field is now out at the Christian Academy. It has a combination lock on the gate for our use and key lock for use by the academy. The field is being prepared and is currently dry enough to drive on.

New Business:

Next month will be the club auction. The meeting will begin at 7:00 p.m. Bring items for auction or sale by 6:30 p.m. so that Al can sort them out and get them ready.

Steve discussed forming a field-planning group. He would like to have everyone involved in the search and keep the effort coordinated. He is specifically asking for volunteers to prepare a document that would be used to explain our needs to prospective landlords.

Show and Tell:

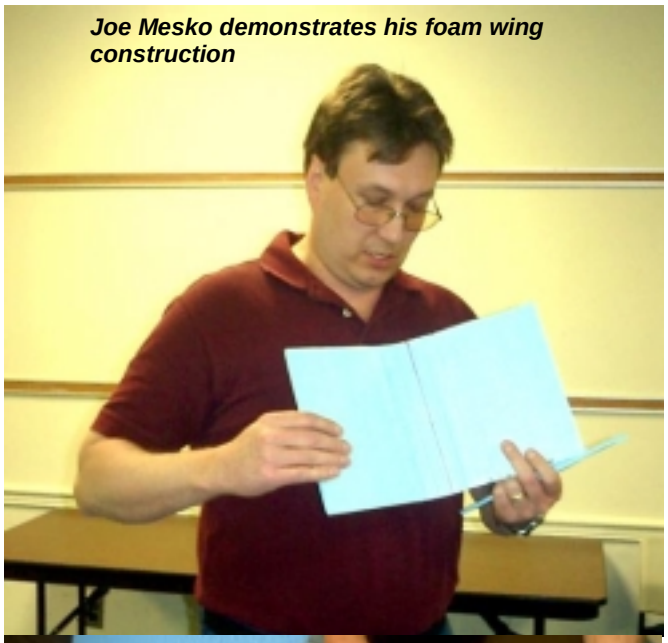
Sam Nevins showed an electric Lanzo bomber. It has a brushless motor on 7 cells, which seems to have plenty of power.

Sam Nevins with his modified Lanzo Bomber

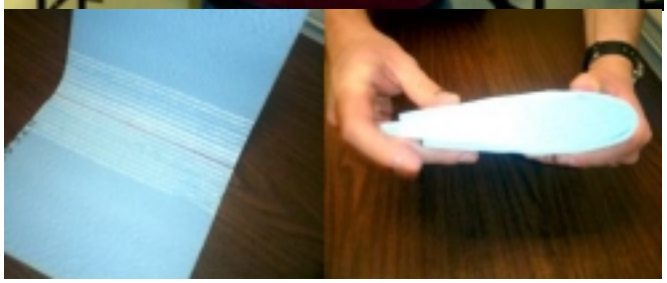
John Trepier showed a piccolo indoor electric helicopter powered by three lithium cells. He's flown it in his bedroom and is trying to get the hang of rotorcraft flying.

John Tripier with his electric helicopter

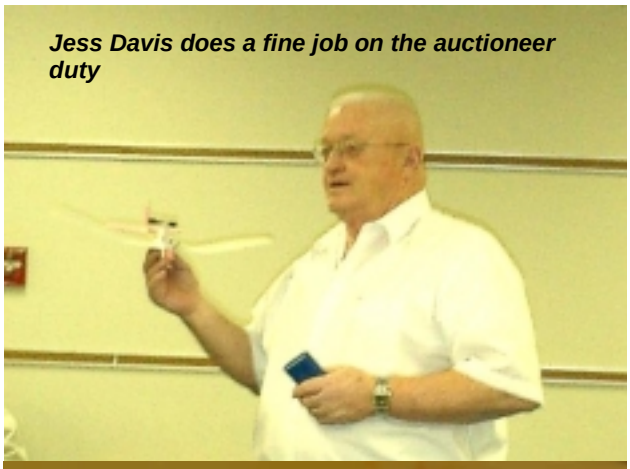
Joe Mesko showed a method of scoring foam sheets and bending them into an airfoil.



Joe Mesko demonstrates his foam wing construction



Following the regular meeting Dick Bartkowski produced four of the indoor freeflight electric powered foamies that he and Dave Harding are providing. Dick had two of the pusher configuration and two Warbirds. Like last month, Dick encouraged the auction of these models together with the necessary charger. This month former club President, Jess Davis did the honors and successfully raised over $50 while selling these models to the eager members. Shown here.



Jess Davis does a fine job on the auctioneer duty

Membership secretary, Ray Wopatek a lucky winner of an indoor AFG

Rick Grothmann, another winner, this one a warbird.

Vice president, Dick Seiwell with his winnings, a pusher ARF

Club Membership Secretary, Ray Wopatek and Vice President, Dick Seiwell were the lucky bidders on the pusher models while Rick Grothmann and Ed Goretzka won the Warbirds. These models feature soft foam fuselages and Depron wings. They are equipped with direct drive Mabuchi N-20 motors with U-80 propellers and two 50-mah Nicad cells. The chargers contain four C cell dry batteries and are used to top off the Nicads by pushing a button for a specific time.

Lucky winner, Ed Goretzka with another warbird, artfully colored by Dick Bartkowski

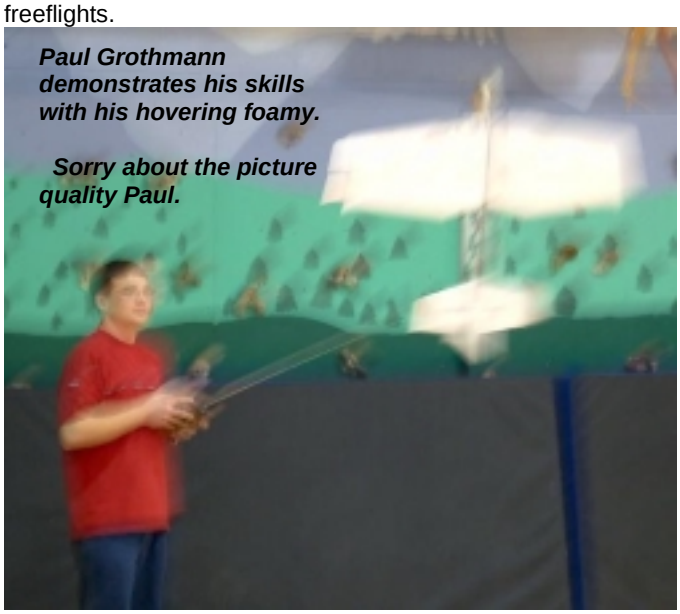
The meeting was adjourned at 9:00 p.m.

Dick Bartkowski, Secretary

Propstoppers January Indoor Meet

Our monthly indoor fun fly in the Tinicum School gym continues to be a well-attended success the morphs from one genre to another as members and guest bring a widening variety of models. The Grothmanns brought the two foamy models they recently displayed in club show and tells. Young Paul set the mark by launching his foamy biplane in the hover mode then flying it that way. I offered to launch it for him but he said he had been practicing this approach and proved to be quite successful at it.

Father Rich found that the gym is a little small for the more conventional 3D foamy he brought. Indeed, we are finding that, like in the UK indoor meets I attended last year, we probably need to break the flying time into various slots to accommodate fast flyers, “hovering” 3D models including the IFO and the freeflights.

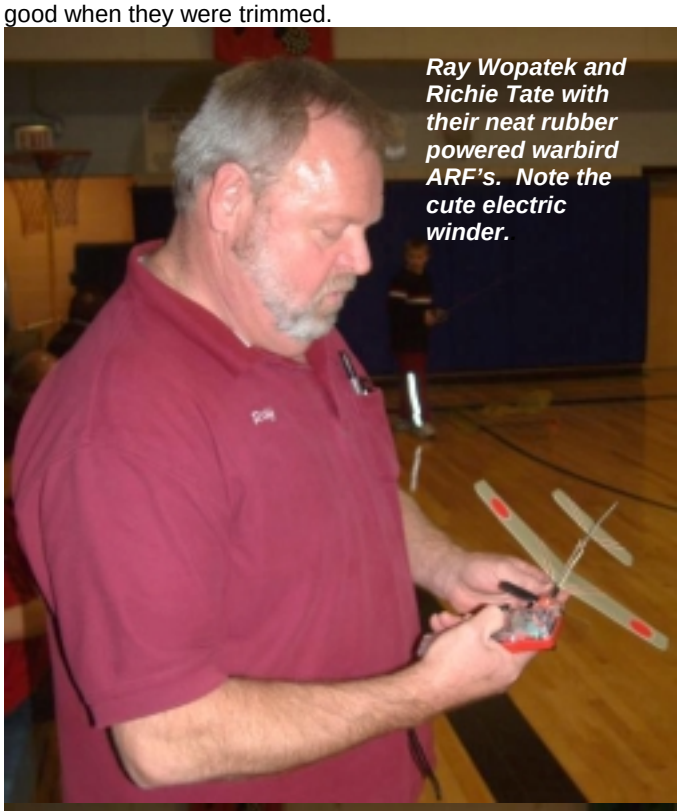


Paul Grothmann demonstrates his skills with his hovering foamy.

Sorry about the picture quality Paul.

Joe Mesko with his electric helicopter.

Membership secretary, Ray Wopatek, brought yet another interesting find; a collection of rubber powered foamy warbird freeflights complete with an electric powered winder yet! Although a bit wild they did show promise and looked pretty good when they were trimmed.



Ray Wopatek and Richie Tate with their neat rubber powered warbird ARF's. Note the cute electric winder.

Of course, the ever-popular indoor foamy freeflights that Dick Bartkowski has been making for the members were in full force, putting in some fine flights. Although these models mix with all the others well enough; they are sufficiently rugged to survive contact with just about anything, the problem is with their handlers. It takes a while to trim one and they must be launched somewhere near the middle of the floor if they are to avoid early contact with the walls. The result is the modelers are standing right where the RC guys want to fly. So, as I said earlier, we need to separate the "rounds" between the various RC and freeflight models. We did this as it became obvious that some waited their tern, but in future we should probably be a bit more organized.

There is plenty of room for more to have fun. Join us on Friday 4th February.

Dave Harding

Fun In The Sun, January 2005 Edition

Last month I shared with you the repair of my two SAM competition models in preparation for flying in the Southwest Regionals Championships in Eloy Arizona. Upon returning to Pennsylvania after New Years I had to finish up the preparation of the models and conduct a test flight for those models I would fly on the first day. They don't allow you to practice on the day of the event and I would not be getting there early enough to fly the day before.

Meanwhile, I had received e-mail from one of the West Coast competitors indicating that he was looking forward to competing against me! Well, that got me thinking as although the Stardust Special was an excellent limited motor run model and won the 2003 Texaco event at the Claremore Champs; it was not my best model. I had not planned to take the 2004 winner, as I didn't think I could pack it. Hmmm… well, I hadn't really tried and of course I would have to modify the wing from one piece to two. How about that, If I cut off the landing gear and made an add-on It would fit, so I set about cutting the wing in two and making the re-inforcement and joiner.

Texaco and Limited Motor Run Stardust Specials

That was easy, now how about the other event that I thought I couldn't fly; Spirit of SAM. I had smashed this model at the 2004 Muncie Champs too and it was in the same condition as my Wakefield. Well, I found that if I removed the tail I could fit this model into the box too. But first I found that the motor prop shaft was severely bent, not surprising as it took the brunt of he terminal dive into the macadam. I did not have another motor, or a spare shaft and there wasn't time to order one so I tried to straighten it.

Five minutes work with a pair of pliers found me with a reasonably true-running prop even though the nose of the shaft was making circles. So I set to work making yet another new front fuselage to splice to the broken one.

So it was that Mick Harris and I made a brief trip to the field one cold afternoon, but mission accomplished as both the Texaco and the Wakefield Electric flew just fine and I was able to set the trimming presets into my Futaba for the various flight phases.

How about that, four models in the box designed for two. I packed my radio, charger, spare batteries and tools in with my luggage so I could check two bags for my flight to Phoenix.

Four models in an air transportable box.

When I decided to fly at this meet I invited an old friend and Boeing colleague from Seattle to join me for fun in the sun. After all, it is miserable in Seattle this time of year unless you are a skier. I am but Colin just had two new knees before retiring. He wants to get into aeromodeling and has bought some stuff but has not made the step to actually flying yet.

The flight and transport of models went fine and as I waited for Colin to arrive I began to assemble the Spirit of SAM model by gluing on the tail and reconnecting the pull-pull controls.

The weather in Phoenix was forecast to be excellent, dry, highs in the 60's, lows in the 30's and low winds. And so it was, what a break from the cold and rain I left in Pennsylvania at the airport.

We had to scrape the ice off the car on Saturday morning, but that is not unusual in the desert this time of the year when the skies are deeply clear at night. I warned Colin to bring warm cloths for the morning so we were prepared.

The first event was Electric Texaco so we charged the model in preparation for an early flight It went perfectly and we huddled on our chairs for an hour and a half to score 92 minutes and change. The best of two flights scores in Texaco so we had set the mark and waited throughout the day for a challenger. It was not to be, as the nearest two competitors could not break an hour, so chalk up one win.

Meanwhile, after the Texaco flight we prepared the Wakefield for its first flight. Here two flights are added together and the maximum score is five minutes. My Wakefield had done well over five minutes in still air so we flew when we were ready rather than waiting for thermal weather to arrive as morning warmed. The Wake performed flawlessly as the deep blue cloudless sky and low wind allowed me to follow it to heights beyond anything it had flown before. The model was almost out of sight at the top of its climb. I could not determine the direction of flight but allowed it to circle until it descended to the point where I could distinguish it. Five minutes was achieved when the model was still so high that it was hard to see and I spiraled down for a re-charge for the second flight.

On the second flight I allowed it to glide at minimum descent speed all the way to the ground. The flight was over seven minutes. So, score two maximums and wait to see what the competition does. I turned out that only one other person made two maxes and that was the fellow who had "challenged" me. We decided to hold our flyoff the next morning, certainly better for me as I am not a good thermal flyer and the still morning air is my meat.

Sunday dawned with the same perfect weather as Saturday, ideal weather for my models and flying skills. First we flew the Wakefield event flyoff, which I won with a flight of just over seven minutes, almost a minute more that the other fellow. This was a good omen for the next event, Unlimited Rubber Electric, another limited motor run event for Old Timer Rubber models powered by inexpensive can motors and seven nicad cells. I used the same model as for the Wakefield event and the seven-minute Wakefield flight was encouraging as the Unlimited maximum was seven minutes.

I made two flights of just over seven minutes, one to the second. This was enough to win as nobody else could make two maxes. Chalk up three wins in three events.

The next event was Spirit of SAM, another event for old time rubber models, this one on the Texaco format where you fly as long as possible with a 45 gram nicad pack. Motors can be run all the time or you can "punch and coast". As in prior meets, this event is flown as a mass launch. There were eight flyers and it was a wonderful sight to see eight different models waft into the deep blue sky. This time tactics came into play as the good thermal flyers sought the good air and I followed the best of them so as to minimize their advantage. As it happened, there was no lift and one by one they exhausted their batteries and altitude to land. Then there were two, my challenger and I and he had altitude on me when my motor wound down. I landed in nineteen minutes and change, he a minute later. Not bad, second place out of eight good flyers.

Now it was time to tame the tiger, my limited motor run Stardust Special. This model has a 1500 feet-per-minute rate of climb and still air performance for an easy ten minute maximum from the ninety-second motor run. However, it is a hot rod and I have never got it trimmed hands-off to allow it to fly to maximum altitude where it is hard to see. Although the wind had picked up in the afternoon we had finished our competition flying for the day and the Stardust handles the wind well enough so we made a series of test flights resulting in almost perfect trim. We were ready for the last day of competition.

Monday was yet another wonderful day, so we were ready for our last event and with good still air performance we were first to fly. The climb was perfect and at the top of the climb I was loosing the model from sight so I cut off early and let it circle for an easy ten-minute max. The second flight was a copy of the first and I let it glide to the ground in just over fifteen minutes. Four others made the flyoff and at last my luck ran out as I muffed the takeoff for a zero. The winning time was less than fifteen minutes so I had them covered, but no complaints. What a wonderful meet, great weather, good friends, three wins and a second in five events, I'll take that any day.

Dave Harding

Tech Note; Structural Morsels

One of the pitfalls in giving simple explanations of complex subjects is that you go too far resulting in an oversimplification that is wrong. Well, that's my excuse and before Alan Baker skewers me for my January gaff I had better back up and make my apologies.

The mistake I published as "truth" was in the assertion that when you add a graphite reinforcing tape to a wing spar you get the combined strength of both parts. Not (as the youngsters say!). So, with hat in hand I will backup to the beginning and start again.

Most of our structural materials are elastic in nature; that is they stretch when loaded. Indeed, most of them are linearly elastic in the region we use them; they stretch a fixed amount for an increment of load; double the load and get twice the stretch. Remove the load and they return to their original shape. Beyond this elastic region they may behave in a plastic manner; they stretch but don't go back, or they may fail in a brittle fracture.

The parameter that describes the elastic properties is known as Young's Modulus and is given the symbol E. E for a variety of the common modeling materials is shown in table 1. In engineering terms, the relationships are;

E = stress / strain

Where stress is the load per unit area; usually psi, and strain is the stretch per inch; inches per inch.

As we increase the area of the member the stiffness increases linearly.

Now we can use this relationship to figure the stretch for a given load;

Strain = Length x stress / E inches

Or

$$\text{Strain} = \text{Length} \times \frac{\text{Load / cross section area}}{E} \quad \text{inches}$$

Or we can figure the load resulting from stretching an element a given amount;

Load = Strain x E x cross section area pounds

OK, got it? Good, now we can move on to the problem of reinforcements but first let's examine some approximate properties for materials we commonly use.

Material	*Density*	*Young's Modulus E*	*Tensile Strength*
	Pounds per cubic foot	*psi*	*psi*
Balsa	*6*	*300,000*	*1,400*
Balsa	*11*	*600,000*	*3,000*
Spruce	*25*	*1,600,000*	*6,700*
Hickory	*45*	*2,000,000*	*20,000*
Graphite Epoxy Uni	*85*	*20,000,000*	*320,000*
Glass Epoxy Uni	*95*	*7,000,000*	*300,000*
Aluminium 7075	*170*	*10,000,000*	*70,000*
Steel Piano Wire	*520*	*30,000,000*	*350,000*
Steel ~ mild	*520*	*30,000,000*	*70,000*

When we join two load-carrying members such that they move and stretch together, they share the applied load according to their relative stiffness. This is amply shown in examining an extreme example where we use a rubber band and steel wire to carry a load. It is self evident that essentially, the steel wire will carry the entire load, as its stiffness is many orders of magnitude greater than that of the rubber band. Furthermore, it is self evident that the total stiffness of the "composite" of rubber and steel is the sum of the two individual stiffnesses.

Now at this time let me point out that we may use a reinforcing element of a different material for two rather different reasons;

- Increase stiffness
- Increase strength

We might seek an increase in stiffness as a means of precluding flutter or to improve control response in our 3D foamy.

I just described the increase in stiffness for our rubber band and steel wire composite and indeed, we accomplish the same thing when we use graphite to stiffen a wing trailing edge or even a graphite rod to stiffen a foam wing in our indoor 3D foamy. But strength is a different matter. Here we are concerned with increasing the strength of the structural elements, like the spars in last month's example, and we want to use the materials efficiently.

Now, although stress and strain are related, and we usually describe the strength of a material in terms of its maximum stress; Pounds per square inch, it is perhaps more revealing to define the material's maximum strain, or stretch at breaking point, (usually micro inches per inch).

"Why is that" you ask, you did didn't you? Well the answer is that it allows us to understand what happens to the strength of a structural member when we use two elements of dissimilar materials to carry load. Let us re-examine the case of the rubber band and steel wire. Good rubber stretches about 600% before failure and piano wire about 0.1%. So it is self-evident that if we stretch the structure the steel wire will fail long before the rubber. Stopping just before this point the rubber will be carrying essentially no load. So you see, when I said last month we can add the strength of the two elements I was wrong.

In our case, where the two elements are closer in strain capability, we call this strain compatibility (Whew, maybe I can talk to Alan Baker now), there is a load sharing, although the calculations are a little complicated. Failure occurs when the material with the lowest strain to failure reaches that point. At that point, the other material will be carrying the load associated with that same strain.

The approximate results of the strength of graphite reinforced wood spars was wrongly depicted last month, and the correct values are shown below.

Note that the hickory / graphite composite is poorly matched as the graphite fails at a lower combined load than the wood capability alone. It would, however, be stiffer than un-reinforced wood. This would be known in sophisticated circles as strain incompatibility!

Wood	*Density*	*Strength of Graphite Re-inforced 1/4 in square ~ in pounds*		
	Pounds per cubic foot	*Unr-einforced Wood*	*One layer of fiber (0.007) in*	*Combined strength lb.*
Balsa	*6*	*100*	*350*	*390*
Balsa	*11*	*200*	*350*	*425*
Spruce	*25*	*500*	*350*	*550*
Hickory	*45*	*1000*	*350*	*750/1000**
** Graphite fails at 750 lb, Hickory then takes up to 1000*				

Dave Harding

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Propstoppers R.C. M.A.C

Joe Mesko flies his own-design 3D at the Christian Academy field in October. It is a fine place to fly these models

Club Auction at the next meeting.
Come Early
Stuff at 6:30
Meeting at 7:00

Membership Renewal For 2004

Membership renewal for 2005 is now due. You can renew by mail or at the club meeting in February.

Dues are $60.

Ray Wopatek
1004 Green Lane
Secane, PA. 9018

Please enclose a ***copy*** of your current A. M. A. Membership card,
And Please, Please enclose a Stamped self- addressed envelope.

Ray Wopatek Membership Chairman