Carrier Wave

Newsletter of the Phantom Flyers R/C Club http://phantomflyersrc.com

CLUB OFFICERS	Work	Home
President – Herb Johnson	777-7974	(636) 207-9895
Vice President – Ed White	232-1479	(636) 441-6431
Secretary – Mitch Galatioto	234-5141	(636) 447-5484
Treasurer – Dan Sundman	777-9204	(636) 281-0676
Safety Officer – Emery Kattelman		(636) 946-3511
Boeing Rec Counselor – Larry Leuschke	234-5116	(636) 537-1472
Field Manager – By Committee		
Chief Flight Instructor - Al Bone		(636) 723-4062
Activities Committee Chairperson - Dan Abel		(314) 830-0138

Board of Directors:	Work	Home
Phil Moore	(314) 777-4167	(636) 928-5342
Ed White	(314) 232-1479	(636) 441-6431
Jim Wortkoetter	(314) 777-8953	(636) 947-1034

Send Membership Renewals to:
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St. Peters, MO 63376

Send Newsletter Items to:
ED. Dave Evans
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November 2005

Upcoming Events/Important Notices

November 16, Club Meeting at Senior Center

December 3, Christmas Dinner

Notes from the Editor

Articles, pictures, and tech notes for publishing in the Carrier Wave are always appreciated. If you need photographs, I have the photo equipment and will gladly volunteer to help as will several other club members.

Thanks,
Dave Evans

Phantom Flyers RC Model Airplane Club Minutes – 19 October 2005

The meeting was brought to order at 7:00 by stand-in Pres Mitch Galatioto. There were 16 members in attendance.

Secretaries Report: The Secretaries report was approved as written.

Treasurer's Report: The club continues to remain solvent. The report was approved.

Recreation Report: There was nothing to report from Recreation this month.

GSLMA Report: There was no report presented.

Field Manager's Report: Al Grossman and George Dauble both received bids for contracting out the pavilion floor and concession stand pad. The bids were $3600-$3700 for 6 bag pour concrete with meramac sand mixture. The club discussion yielded that they were only willing to spend up to $2000 to have the pad poured. The club will continue to look for a lower bid, perhaps from someone who is looking for a construction side job.

There was no update on the runway crack filling progress.

A shipping container status was provided and Jim Wortkoetter mad a motion that was approved to authorize up to $400 to move the containers should they become available.

The club suggested that the company where the new mower was procured be contacted and notified of the hydraulic whine issue. If the company states that it is not an issue, the club requested they provide something in writing in case of post warranty system failure.

Donn Albert volunteered to service the green mower at the end of this mowing season. Thanks Donn!

Safety Report: The safety officer remained safe by not attending the meeting. Instead, he is vacationing in Florida to visit Hurricane Wilma! Does anyone else see the irony in this?

Activities Report:
Larry Leushke needs officer assistance to get the Expo room rental cost down. The Expo is scheduled for 25 March 2005. He provided the paperwork for passing on to Herb Johnson/Ed White. Larry is requesting 4 volunteers with internet capability to help solicit door prizes from RC suppliers. This job needs to accomplished now to give suppliers enough time to respond. If you'd like to help, contact Larry. Also, it was suggested that we request our AMA District VP attend the Expo. Frank Thomas will look contact them.

Dan Abel was not in attendance as he and his wife have just returned from adopting another little girl! Congrats Dan! The club Christmas party will be held on 3 December at Dan Abel's church and will be catered by the same person who has done our past events. Dan has reserved the youth room at the church and he will contact the caterer. Please put this date on your calendar!

Old Business:
The following people volunteered for offices next year. Thanks!!!

Club officers - Elected

- President (Employee) - ? Need Volunteer
- VP - Frank Thomas
- Secretary - ? Need Volunteer
- Treasurer (Employee) - Dan Sundman
-

Club officers - Appointed

- Webmaster -
- Recreation Councilor - Larry Leuschke
- Safety Officer - George Dauble
- Activities Chair - ? Need Volunteer
- Field Manager - ? Need Volunteer
- Carrier Wave Editor - Dave Evans
- Chief Flight Instructor - Al Bone
- Tech Director - ? Need Volunteer

The club officers will be voted on at next month's meeting. If there are no volunteers for all of the above positions, the club will have to begin next year without them – not good. This is a great way for new club members to get to know the club and the membership. So please volunteer. The old hands will provide assistance if you need it. So, if you wish to run for any of the other offices, please notify Herb Johnson.

New Business:
It's that time of year again – DUES are due. Please fill out a new membership form, sign the hold harmless at the bottom and send in your check by 31 December 05 or you will be charged a late renewal fee of $15! If you joined the club after Jun 1st, you do not have to pay dues for the upcoming year, but you do need to fill out a new form and sign it. Remember to get your AMA payment in early as well so your membership card can be issued.

Jack Douglas recommended the frequency board be changed to add park flyer frequencies. Jack will provide the frequency numbers.

Howard Smith asked if there was going to be additional impact on RC flying as a result of the FAA getting more involved in regulating UAVs and denying full scale field usage for model events. A discussion ensued, with the conclusion that there would probably be some impact and the AMA would be the body to assist with limiting the impact.

The club meeting was adjourned at 8:05 p.m. Next months meeting will be at the St. Peters Senior Center on 16 November.

Mitch

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from Electric Flyers Only, Inc., Croswell MI

Building a Vacuum Press System

Ken Myers, editor

There are many ways to make a vacuum press. This article doesn't cover how to cut foam or how to bag wings. (There many Web sites/articles that cover this.) This project is fun if you're a builder, so go for it. A vacuum press is a must for making wings and other parts for model airplanes. If you are a builder and wish to advance your skills, a vacuum press is the way to go.

I have built several vacuum presses. I usually start by using the absolute cheapest parts, and spend the rest of the time working my way out of the mess I have created. The learning curve in life is brutal, but maybe I can save you some pain.

Our perception of what is a fair price seems to depend on rather strange parameters. I'll pay $100 for a 3-oz brushless motor without blinking, but I'll try to save a few lousy dollars in the strangest ways on most of my projects. Sometimes I win, sometimes I lose. This time I won (it took me four tries).

I started with a hand vacuum pump, progressed to a venturi/air compressor system, then to a compressor out of a defunct refrigerator, and finally to this system.

The hand pump didn't move enough air. The venturi method was wearing out my air compressor, pleasing the utility company, and making a lot of noise. The refrigerator compressor only moved .5 CFM, and the exhaust spewed oil into the air.

My final vacuum press described here is patterned off industrial-type systems. It works without the problems my other version had and it's a real pleasure to use. Commercial systems such as the ones Vacupress or CST make start out at $300 and go to several thousand, so the $150 or less you may spend is a good deal.

The Basics

Air is sucked out of a plastic bag, and the resulting atmospheric pressure squeezes the parts together with tremendous and uniform pressure. This pressure is adjustable from 3 inches to more than 25 inches Hg. Foam will flatten at anything more than 8 inches. I set my system for 6 inches for this application and at roughly 20-21 inches Hg for woodworking. This system can produce more than 1800 pounds per square foot of pressure and is a lot cheaper than feeding an elephant.

Components

A good pump is the heart of this system. I found a 1/4 hp surplus pump at Surplus Center. It pumps roughly 3-4 CFM. These surplus pumps came from Storage Technology and appear to be in good shape. Surplus Center has a good guarantee and will pay for shipping both ways if you get a defective pump.

The down side of this pump is that it uses a 240-volt motor. If you don't have 240-volt in your shop you may have to use your clothes dryer outlet or find another pump.

You can buy used vacuum pumps on eBay at good prices, but I'm afraid of them. Vacuum pumps are used for biological experiments and with toxic chemicals sometimes. Do I need to explain where the Hulk came from?

My pump made noise like a small air compressor so I screwed a muffler on the exhaust. The compressor runs very little while working, so the noise is not really a problem for most people. I just don't like noise (that's why I fly electric). Some pumps are totally silent, for example a refrigerator compressor, but I found they don't pump much air.

I have a very large shop, 2400 square feet, so I needed a portable system. I bought a small folding table, installed wheels, and added a shelf and the vacuum components. I use the top of the table as a worktable, but I wanted it to be perfectly flat. So, I covered the medium-density fiberboard with Formica on both sides. I used the vacuum press (of course) to install the Formica. Trust me on there—forever! If you don't have the room for a roll-around, you can simply make a small wood tray to carry the press around. It's not very heavy, 40 lbs. maybe, without the reservoir. None of the layout or plumbing is critical so do what ever looks good to you.

Reservoir Storage Tank: The idea behind this is to provide a large vacuum supply so the pump doesn't cycle on and off rapidly. It also is used to help evacuate the bag. The air is pumped out of the large reservoir, and then closed off with a valve. When the wing is installed in the bag, the valve is opened with the pump running and this evacuates the bag quickly. A bigger reservoir is better in this case.

A small-capacity reservoir doesn't provide enough spare vacuum to work very well for big bags. The wings we make, however, don't require much pump down. The large bags I use on furniture require a huge pump down.

I used a 12-gallon portable air tank for a reservoir. You really don't need a reservoir with the pump I called out, but it looks so cool. The tank does take out many of the surges and slows down the pump cycling. It can be added later if you decide you need it.

Vacuum Switch: This regulates the pressure. It turns the pump on and off as needed. A small screw setting allows you a wide range of pressure. Air Logic model V-5100 is the one I use. The price is roughly $25.

The pressure swing is roughly 2-inches with the single switch. If you want less swing than this you will have to use two switches. One switch is used to control the high pressure, and the other to control the low pressure. This particular model is very popular and seems to be the one everyone else uses. I only use one switch, and haven't found the wide swing to be a problem.

The switch is rated 15A by the company. The pump only pulls 1.6A so there is no need to rig a control relay. Break one side of the 240 volt line, and wire it to the switch contacts with push on connectors. I mounted the switch inside a plastic electric box.

Vacuum Gage: This shows you how much vacuum you have in the bag. Without it you cannot set the vacuum. It can be ordered from the same company that carries the vacuum pump.

Miscellaneous Parts: I purchased the rubber vacuum hose and a few other parts at the local auto-supply store. Most of the rest is standard plumbing hardware available at various home-improvement stores.

Bags: There are many articles on vinyl bags and valves. You can buy or make them, but I don't think something this heavy is needed. I use 2 mil sheet poly that I simply cut to fit around the part and make it

roughly 8 inches oversize. I seal the edges of the poly sheet together with plumbers caulk. A 1/8 inch brass tube is laid on top of the caulk, and more caulk added on top. The plastic is then pressed into the caulk. When you pull a vacuum the bag self seals. I had a lot of trouble getting a good seal when using small pumps. The big pump seals the bag very quickly.

Mechanical Assembly:

I made a PVC manifold with a built in vacuum gauge to manage all of the hoses.

1. manifold line to vacuum switch
2. manifold line to pump
3. manifold line to storage tank "T." (Important: Use a large enough line here to prevent rapid cycling.)
4. "T" mounted to storage tank with shut-off valve; line from the valve goes to bag

Parts List

Vacuum pump
Vacuum gauge
Vacuum switch
Filter
Check Valve (Goes between pump and manifold.)
Ball valve

Misc.

- 1/8-inch rubber vacuum hose; 5-7 foot long (used as vacuum hose from manifold to storage tank) I used 1/8 inch hose to the bag. It slows down the evacuation and allows the bag to flow around the part. A bigger hose could be used.
- Line cord for pump and 240-volt plug.
- On/off switch for pump, 240-volt and electrical housing box.
- 1/8 inch hose barbs and Ts as needed; 1/8-inch pipe as needed.
- Teflon tape
- Muffler for pump
- Reservoir (12-gallon compressed air tank

Disclaimer

The author has no affiliation with any of the manufacturers mentioned in this article. You are on your own as far as any additional advice. Check out www.joewoodworker.com for his version of a press.

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from the River District RC Eagles, Saint Clair MI

Which is Better: PPM vs PCM

by Ed Olszewski

Aside from all the other choices when selecting an RC radio system, the terms PPM and PCM comes up. PPM or Pulse Position Modulation is standard FM. The next step up is PCM or Pulse Code Modulation which seems to be shrouded in mysticism. In a nutshell, it is not what frequency each is on, but how they use their frequencies.

To demystify PCM somewhat you should understand that there is no range increase with PCM. It is not on some special side band or frequency. It shares the exact same FM frequency everyone else on your channel is using, and is susceptible to the same interference. There is, however, improvement in noise reduction and safe performance while the noise is received.

Noise is the undesirable signals on your frequency. They can be caused by anything from sunspots to another transmitter horning in on your frequency. Today's modern radios operate on a narrow band that eliminates most of the random noise.

Basically, the PCM radio takes your FM signal and "codes" it digitally (the "C" in PCM). Then the PCM receiver "decodes" the signal to utilize it.

Since noise is not a normally recognized code, it is ignored by the PCM receiver, and is not sent as servo instructions. In addition PCM does not transmit position signals for each servo in each transmitter pulse. Rather it transmits movement commands as required, and occasional positions confirmation commands. Short periods

of interference will simply leave the servo at its last known position, and not show such radio interference as glitches or fluttering.

If your PCM receiver continuously receives interference past the preset time, it then switches into "failsafe mode," and obeys some preset commands you programmed in the receiver. For example, you may set failsafe to throttle down and move all other surfaces to the neutral position. This is great if you are in level flight, but disastrous if you are exiting a loop. If set to continue the last command, it will often keep your model in the loop. Unfortunately, failsafe settings will put your model in a precarious situation you didn't want it locked into.

A third level of protection may be obtained by using a pilot assist module in combination with preset positions on the failsafe settings. You can help ensure your model will go to level flight at a slow—but safe—airspeed and hopefully safely ride out the interference.

Even though the radio does not glitch, it is not to say the PCM radio was in good contact at all times. If another radio is transmitting on your frequency, it can—and likely will—interfere with your receiver's ability to receive the proper signal from your transmitter. The CB radio enthusiast in the seventies used to call this being "walked on." PCM will help keep your receiver from acting on a bad signal, but there is nothing it can do if a good signal can not be received over the interference.

The logic of PCM is that it is better to momentarily do nothing than act on a bad signal. PCM benefits are purely in precise transmitter/receiver communication. PCM does, unfortunately, have a serious weakness. Even minimal atmospheric or external noise can foul up those wonderful intricate binary numbers beyond any correction. In that case, the receiver is up a creek without a paddle. Think of it as if trying to communicate a grocery list via cell phone in a "one bar" area—some things are not going to make it in the grocery cart. With PCM the main purpose is to hide glitches by not transmitting them to a control surface command. As far as the pilot is concerned, there is only an unnoticeable momentary loss of control. If the radio interference is persistent, the pilot will probably be unaware and may lead to total loss of control sending the airplane either into the wild blue yonder or to the ground.

On the other hand, the simple PPM pulses may be corrupted with some information getting through. When things go bad, the choice is between no control (PCM)—and some control (PPM). Most RC pilots would prefer having some control even if erratic. When a model aircraft is suddenly doing the funky chicken, it is normally a signal to land.

Most radio interferences are normally small glitches and are recoverable, giving the PPM pilot a chance to land and find the cause of the problem.

The bottom line is if you are looking for a bullet-proof radio system to keep your airplane from falling from the sky, it does not exist. A system sporting PCM is an excellent choice for larger acrobatic and 3-D fliers with quick throws, where a small glitch may send it suddenly into the ground. PCM will of course work on smaller, more docile airplanes. These airplanes will benefit less from the added features, and PPM is probably a good bet.

Remember there is no substitute for a good battery charge and a range check. If another radio on your frequency is turned on, there is little any radio can do to keep you from being "shot down."

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from www.ultimatecharger.com

Color Theory for Models: Choosing the Right Color

by Dr. Robert Suding

All RC fliers have gotten that "I can't tell which way it's going" feeling when learning to fly RC. Several simple color trimming steps can help you fly your airplane better, whether you are a beginner or top dog in Pattern.

Most airplanes, especially ARFs, are covered or painted to look good in the store. But in the air it's a different story. The situation is very simple—if you can't see it, you can't fly it.

To successfully fly an RC aircraft, the pilot must have good orientation and distance perception. The eyes estimate aircraft orientation based on the perceived position of the model's outer edges, and the relationship of these outer edges to the edges of any discernible trim markings on the airplane's wings or fuselage. Distance perception, in turn, depends on a combination of one's perception of the aircraft's outside edges and its

estimated orientation.

After you have located your airplane and estimated how far away it is, you must immediately recognize several attitude orientations:

- Is it flying toward me or away from me?
- Is it upright or inverted?
- Are the wings flat, vertical, or tipped?
- Is it flying horizontal, upward, or downward?
- Is it flying parallel to the runway or vectored?
- Is it flying perfectly vertical or skewed sideways or fore/aft?

The following suggestions will help you with distance and attitude perception. Visual acuity and contrast perception diminish with age, but by using correct color concepts, even senior fliers will find that visual orientation of their aircraft can be consistently and reliably achieved.

Solid-Colored Aircraft

RC airplanes are flown in all kinds of weather and background conditions. A solid-colored aircraft will sooner or later fly into a condition where it blends into the background. This will result in a complete loss of location and orientation since no edges can be perceived. The absolute worst, in my opinion, is a silver Mustang in a heavily overcast sky. Yellow Cubs are tough to see when back lit by the sun. I had a dark green airplane that would disappear when I landed with a background of green trees. Red Stiks and dark blue airplanes go invisible in late evening and storm conditions. A solid-colored airplane is easier to cover, but it won't do you any favors up in the sky.

Wing and Horizontal Stabilizer Shades

The top of the wing and horizontal stabilizer is normally lit by sunlight. The bottom of the wing and horizontal stabilizer is shadowed. Coloring the top lighter and the bottom darker keeps this same relationship even in changing lighting conditions.

ARFs are classic blunders in coloring. Either they have identical top and bottom wing colors, or they put some token color on the top of the wings and leave them white underneath. They look good in the store, but don't help the beginner at all.

I always recommend that beginners cover the bottom of the wing and the bottom of the horizontal stabilizer with dark-blue contact paper before flight.

When flying at a distance of 500 feet or more (depending on the size of the model and lighting conditions) you can't see colors, because the cones of your eyes that perceive color are 2,000 times less sensitive than the rods, which perceive illumination.

In these circumstances, your gray-scale vision (your perception of lightness and darkness in a black-and-white image) provides your orientation and depth perception, not color. Any series of adjacent colors on your aircraft that are intended to facilitate orientation should therefore be gray-scale opposites. For example, a series of bands consisting of red, yellow, blue, and then white is desirable. Don't assume a series of "color opposites" such as red, green, blue and black will be effective. These all have the same dark gray-scale shade and will show an equal tendency to disappear in a deep blue or heavily overcast sky.

If you use the wrong series of color bands, you won't know how far away your aircraft is, and you won't even know which way it's heading to bring it pack. Also, don't rely on intricate patterns. They blend together to form edgeless fuzz approximately 100 feet away. You can test potential color schemes for gray-scale perceptibility by video taping and playing back alternative color schemes on a black-and-white television or on a color television with the color control turned down.

Actual Patterns to Use

The best color scheme for beginners that I have found is a combination of large starburst patterns on top of the wing and horizontal stabilizer, and a solid dark color underneath the wing and horizontal stabilizer.

Beginners consistently become perceptually disorientated when flying at a distance, especially when the airplane flies at a 45° angle away or toward the pilot, since the aircraft silhouette is identical. With the starburst pattern, all the beginner has to do is slightly roll the wings towards him, and the starburst pattern becomes an arrowhead, pointing in or out, the direction of flight.

Start by covering the bottom of the wing and horizontal stabilizer with any dark color. The exact color could be black, deep red, dark blue, or green, it doesn't matter; they will be the same gray-scale color at a distance. Then put a 2-inch strip of some light color along the leading edge of the bottom. Do the same for the bottom of the horizontal stabilizer, and make the light strip roughly 1 inch wide.

The base color of the top of the wing must be a very light color such as white, yellow, or some other very light color The starburst pattern starts out at the center of the wing, from 3/8 inch under the wing's leading edge to roughly 1 inch back from the leading edge at the top. Then it is a large "pie slice" to the wing tip, where it extends from 3/8 inch under the wing leading edge to the trailing edge on the top. A second pie slice of a different dark color extends from the center of the wing to points one third and two thirds out on the wing. Both sides of the wing are colored like this as is the top of the horizontal stabilizer.

Landing Considerations

Landing requires keeping your wings flat and knowing where you are in the landing approach. You are generally close to the airplane during the later stages of the landing approach, so your color perception is improved, but the wings will be edge-on to your line of sight. The leading edges should be very prominent against any background such as blue sky, white clouds, dark overcast, distant mountains, or green trees. All of these items have spectral lines toward the higher frequency blue or green region, so a very simple solution would be to have a low frequency color such as red or orange on your wing and horizontal stabilizer leading edge.

At the field where I fly in Colorado, ARFs with blue wing edges are almost invisible when a low approach from the West dips the airplane visually below the mountains, resulting in very klutzy landings by beginners.

The leading edge red or orange pie slice is wrapped around the leading edge so that it has the maximum area of visibility when edge on. The 2-inch strip of white on the bottom of the wing near the leading edge will become visible during the landing flare, aiding in precision landings.

I prefer a white background on the top of the wing and horizontal stabilizer, with a bright red leading edge pie slice and a metallic blue inner pie slice on trainer airplanes. The same metallic blue under the wing looks nice, but any dark color works fine

Fuselage and Rudder Coloring

The same coloring rules apply to the fuselage. Keep the top of the fuselage light, and the bottom dark.

The sides of the fuselage should aid you in flying horizontal passes. A solid color fuselage is very difficult to keep straight and level because all of the aircraft reference lines are curved. Light blue-and-white fuselages (a favorite ARF color scheme) blend in with the sky and clouds too well, and will become invisible under some lighting conditions.

Draw a line along the thrust line of your aircraft, roughly splitting the top and bottom of the sides in half. Make the top half of your fuselage sides a light color. Make the bottom half a dark color, usually one of the wing pie slice colors.

Analyze how you fly. Beginners and experts, who fly inverted much of the time, should make the fuselage line color demarcation exactly follow the thrust line. Beginners fly airplanes with lifting, flat-bottom wings, so the aircraft fuselage side flies a straight line.

The expert flies an airplane with symmetrical wings, so he flies at a slightly raised altitude to maintain level flight, whether upright or inverted. Therefore he should also have the fuselage line color demarcation exactly following the thrust line. When doing a horizontal pass, he should maintain an equal rising thrust line sight picture whether upright or inverted.

The interesting situation is the beginning aerobatic pilot. His routines do not include horizontal, inverted passes, but his maneuvers do include many horizontal flight components. He will usually be flying an aircraft with symmetrical airfoil wings, so the aircraft will be moving through the air with a slight upward orientation. He should offset the fuselage side color demarcation upward at the tail of the aircraft by roughly an inch. Now he can practice his horizontal passes by keeping the fuselage side lines parallel with flat ground.

The vertical stabilizer and rudder should have very wide horizontal bands of color. Make the top of the horizontal stabilizer the same color as the wing tips. Then put a light-colored band, and below this a dark-colored band, usually the same color as the inner pie slice on the top of the wing. The base color of the vertical

stabilizer and rudder should be the same light color of the wing.

Another variant for the vertical stabilizer and rudder that works well on trainers with very big tails—such as the Kadet series—is a starburst pattern on the top of the wing. This aids the beginner in determining the direction of travel when flying at a distance. The tail's starburst pattern becomes an arrowhead pointing out the direction of flight.

Looping

Consider what the usual looping problem always is for the beginning aerobatic pilot. The pilot does not begin the loop with his wings flat. He usually corkscrews in or out. Proper coloring of his low-wing or mid-wing airplane can be a major help.

Make the wing tips stand out. I usually make the outer 2 inches of each wing and 1 inch of each horizontal stabilizer the same bright red that I color the leading edge. If you follow my advice above on the wing bottom and the fuselage sides, the wing tip can be visually correctly placed for a perfect loop. If the wing tip is too high, resulting in a corkscrew out, the pilot will see the dark wing bottom. If the wing tip is too low, resulting in a corkscrew in, the pilot will find that the wing tip blends too well with the bottom of fuselage side. The correct sight picture will be the wingtip cleanly placed against the upper lightly colored fuselage side. Look at the International Miniature Acrobatic Club or Pattern airplane pictures in RC magazines. They always have a dark color on the top half of the fuselage side into which the wing tip blends, causing looping problems.

Geometric Shapes

Humans can recognize different geometric shapes 1/10 of a second faster than colors. I use this phenomenon to help me with the vertical rolls performed in advanced aerobatics. Instead of a solid dark color on the bottom of my wing and horizontal stabilizer, I put four large circles on the bottom of the wings and two large circles on the bottom of the horizontal stabilizer. The noticeably faster recognition of the round shape verses the line shape aids me in nailing the vertical rolls.

A number of people at my field have copied my bottom circles without knowing the reason why I use them. The solid colored bottom is preferred unless you are doing vertical rolls.

Sunglasses

Several years ago I flew with some expensive Serengetti Driver sunglasses. These had a red tint to them, I guess to cut down on the ultraviolet region. I lost visual perception on a solid dark blue airplane during a landing approach and crashed.

Fortunately they were stolen at a hobby store a week later, and I got some RayBan aviator sunglasses with a blue-gray tint. What a difference!

Red is at the low frequency part of the visual spectrum, and blue is at the high frequency part of the spectrum. Red or yellow-tinted sunglasses reduce all colors to high-contrast shades of gray, making your aircraft in the air appear completely different from the appearance of your aircraft at home or in the pits. Gray, light blue, or light green tinted sunglasses make the airplane in the air look just like the airplane in the pits, and because your vision is extended into the high frequency part of the visible spectrum, you will have twice the visual perception range!

Final Thoughts

- Evaluate color schemes for visibility first, beauty second. Dark-colored airplanes are more difficult to see in overcast skies and in the evening.
- Scale airplanes are a special problem. Warbirds were colored to avoid detection, just the opposite of RC airplanes. Avoid flying scale-colored airplanes until you a very experienced flier.
- Avoid dark colors on the fuselage where your battery and receiver are located. The heat buildup can result in loss of battery capacity and premature radio failure.
- Don't fly when someone with a airplane identical to yours is already flying. ARFs and yellow Cubs are particularly susceptible to this problem. Several years ago two fliers were flying with identical ARFs. When one of the models landed, both modelers went out to get the airplane. Much to the entertainment of the folks in the pits, one modeler discovered that his airplane had crashed out in the field five minutes previously because he had lost track of which airplane was his, and he was "flying" the wrong one.

BOEING EMPLOYEES' RC MODEL AIRPLANE CLUB

2006 MEMBERSHIP APPLICATION

Submit form and membership dues to:

Mitch Galatioto,
574 Wyatt Drive
St. Peters, Mo. 63376

Work:
P.O. Box 516 (S306-5140)
St. Louis, MO 63166
(314) 234-5141

Membership Type and Fee:

Regular/Retired	$50/year x ____ yr(s) =	_____
Family (IRS Dependents)	$55/year x ____ yr(s) =	_____
Auxiliary (see below)	$50/year x ____ yr(s) =	_____
Nonparticipant/Co-Op	$ 5/year x ____ yr(s) =	_____

Select One

Note: All new applications received after 01 Jul of this year will receive next year's dues free.

***** Late Renewal Fee ******* $15 fee _____

(Late Renewal Fee Required if member hasn't paid by 31 Dec of 2005)

Make checks payable to:
Boeing Employees' RC Club, Inc.

Total Amount Due = _____

	Eligible Member	***Additional Family Member***
Member Name (Name/Nickname)		
AMA Number		
Work Phone		
Employee Number		
Department		
Mailcode		
Home Phone		
Street		
City, State, Zip		
Birth Date		
Spouse's Name		
Work E-Mail Address		
Home E-Mail Address		
Can Tow Mower? (Yes/No)		
Can Mow Flying Field? (Yes/No)		
Radio Frequencies (List all you use)		

Auxiliary Member Only: ($50 <u>each</u> Auxiliary Member)

Qualification: _____ Immediate Family Member* _____Former Boeing Employee**

*Please indicate relation to member ___ Parent ____Sister/Brother ____Non-Dependent Child

If immediate family member, please indicate the sponsoring qualified club member: _____

_____

**Former Boeing Employees are defined as those who either voluntarily terminated their employment or individuals who were previously employed by the company and terminated as a result of reduction in force. In addition, they must have been employed by the company and been active members of the club for which they are seeking associate membership for a minimum of 3 consecutive years immediately prior to their application for associate membership.

For Club Administrative Use Only	**Dues Received _____Date**	**Current AMA Received/Shown _____Date**

My signature below signifies that:

I have read, understood and will abide by the Phantom Flyers R/C Safety and Field Use Rules.

I understand that my participation in this activity is purely voluntary and I agree to hold Boeing harmless for any and all liability for any injuries including death, which I might sustain while participating in this activity. This release will not affect any benefits to which I am entitled under the Boeing benefit plans.

Signature: _____ Date: _____