



HI-SKY R/C FLYER

October 2006

Volume 35 Issue 10

President: Gene Laughlin
Vice President: Bruce Hoover
AMA Charter Club #851

Treasurer: Ed Anderson
Secretary: David Harrell
www.hiskyrc.com

Meeting:

The October 2006 meeting will be held at the First Baptist Church Activity Building at the corner of Garfield and Louisiana October 3, 2006. The meeting will begin at 7:00 PM.

Locks

After you open any of the combination locks, please roll the numbers over to "0, 0, 0, 0". We don't want to give away our combination to non-members.

HI SKY R/C Club Minutes: September 05, 2006

Meeting was held at the First Baptist Church Activity Center

Gene Laughlin opened the meeting.

There were 22 members present.

The 7/2006 minutes were approved as written.

There were no minutes for the 8/2006 meeting at the field.

It was canceled due to heavy rain and wind.

Field Report: Bruce mentions that the field needs mowing. Tom Kuhn has volunteered to mow it before the Hog Fly. The club has scheduled a field clean up day for Thursday at 7:00pm.

Safety Report: AJ Lee reminds everyone to watch for snakes. Also we should remove our cards from the frequency board after flying.

Activities: Jim Ruple has reminded us that the Hog Fly is

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From the Knox County Radio Control club, Knoxville TN
The Three Deadly Sins of RC Flying
by Jeff Procise

In the three years that I've belonged to the Knox County Radio Control club, Knoxville, Tennessee, I've witnessed my share of crashes and even thrilled my buddies with a few of my own. One thing that amazes me about this hobby is how often we crash. On any given weekend, one or two members will probably lose a airplane. What's even more amazing is that the vast majority of these crashes are entirely preventable.

Most crashes are caused by simple errors that we make before the airplane leaves the ground. Eliminate these errors and you'll have a far better chance of bringing the model home in one piece. Here are the three most common mistakes that lead to crashes and simple steps for avoiding them.

Wrong Model Number:

Programmable radios make the sport more fun and arguably safer, too. One of the primary benefits of a programmable radio is that it can store settings for several models. With the click of a button, you can call up the settings for your favorite model, complete with trim settings, end-point adjustments, servo directions, dual rates, exponentials and more.

But programmable radios have a dark side. If you fail to select the right model number before takeoff, you may find yourself flying with reversed ailerons, a reversed elevator, improper trims or throws, or other ailments. Rare is the airplane that lands safely when the radio is set to the wrong model number.

The solution is twofold. One, remember to check the model number the moment you switch on your transmitter and make sure it matches the airplane you're about to fly. Two, always check the movement of the control surfaces before flying. Even if you forget to check the model number, you'll almost always catch the error if you check the control surfaces before every flight.

Having a radio set to the wrong model number is the most common cause of reversed servos, but it's not the only cause. Occasionally we simply forget to program in the servo directions before flying a new airplane. Again—make it a habit to check the control surfaces before every flight and you'll head disasters off before they happen. Before flying a new airplane for the first time, get a second pair of eyes to go over it with you. If the ailerons are reversed and you

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**From the Robbins Nest:
Painting Foam Models**

By Dennis Robbins

Many folks are building with foam these days, and Blucore fanfold and Depron seem to be the material of choice. One drawback to scratch building with foam is the color choices. You get to choose from either blue (Blucore) or white or grey (Depron). Most of us like a more visible color scheme, and painting is the only way to obtain the desired look. I paint most of my aircraft, and I'd like to share my simple techniques for painting foam.

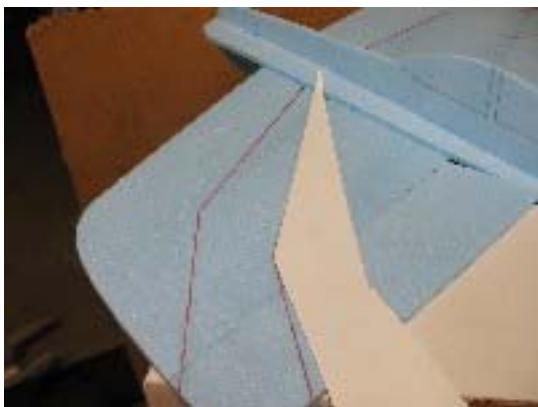
The first step is to make a paper template of the design you want. I then place this on the plane in the desired location, and mark the corners of the template. I then use some type of colored permanent marker which hopefully matches the paint color being used, and connect the dots, more or less. This gives me a border, and paint can be applied between the lines. The paint I use is the cheap acrylic water based paint found at your local craft store. These come in small plastic bottles, and only cost about \$.75 cents to \$1.00. You will be amazed at the color selection. All you need to get started is a small container to squeeze a small amount of paint into, and several sizes of inexpensive paint brushes. I also keep some craft sticks on hand for stirring the paint if needed. To thin the paint, just add water, and stir away! The last thing you need to know is be patient! Let the paint dry completely, and you will be rewarded with a plane everyone will be envious of.



Needed supplies: paint, brushes, sticks



Paper templates of desired design



Additional template placement



Mark the corners of the template



Use permanent marker to transfer pattern



Plane is now ready for paint



Use small paint brush to paint outline



Fill in between outline with larger brush



First color has been applied



Finished airplane ready for hardware

this September 16. It is a one day event. A paper was passed around for members to sign up and list the food items that they will bring to the Hog Fly. Gene suggested and the club approve to pickup ribs for the event from Michaels.

Old Business: Ed Anderson provided a current 2006 members list to the club members present. Gene is waiting on a response from the city on the new field progress.

New Business: We had a discussion on the electric usage at the field. We had a large increase in the current monthly electric bill. We have tabled the issue to see if this is just a one time issue or not. Due to space limitations at the CAF hanger, we may not be able to build/sale Delta Darts at the CAF event this year.

Gene is contacting the AMA and the District 8 frequency coordinator about our possible frequency interference and how to track it. Gene has also spoken to the District 8 V.P. Sandy Franks.

Meeting was adjourned.

Show and Tell:

Dennis Paschall brought an electric plane with an E-flite 480 motor, covered in Monokote and Ultrakote. It weights about 42 ounces.

Jim Ruple brought a Hyperion ARF - CAP 232. It has a BP12 motor with 8x6 prop.

Dennis Robbins brought a 80% reduced Fat 3DX cut from blue core foam. The estimated flying weight will be about 4.5 ounces.

Gilbert Hernandez brought a combat plane with an OS .15 and full flying stab.

Club Raffle: A GWS 4P receiver was the raffle item. The raffle generated about 70 dollars for the club.

Picked up Passing by:

We are at the near end of the club fly ins. If you can make the trip there is a couple in the area. The first is the Clovis Oktoberfest Fly-in. They have a contest and a lot of open flying. They also have a raffle planned. The other is the San Angelo RC Fly-in and Swap Meet. They always put on a good show with great food and plenty of raffle prizes.

It was mentioned at last months meeting that we should be looking out for snakes. That is something we should do most of the year. That pad is warmed by the sun and they like to go to a place that is warm. So be watchful and enjoy flying. You don't want to make a trip to the hospital emergency room.

Please make it a point to vote in the upcoming AMA elections. You need to make your vote heard. Each vote does matter.

Don't find fault; find a remedy. Anonymous

From Longmont Aircraft Modelers Association, Longmont, CO

Murphy's Laws Revisited

by Al Coelho

Murphy had some laws; here are some of Al's.

1. Law of mechanical repair: after your hands become coated with grease your nose will begin to itch or you'll have to go to the bathroom.
2. Law of tools: any tool, when dropped, will roll to the least accessible corner.
3. Law of probability: the probability of being watched is directly proportional to the stupidity of your act.
4. Law of the telephone: when you dial a wrong number, you never get a busy signal.
5. Law of the alibi: if you tell the boss you were late for work because you had a flat tire, the very next morning you will have a flat tire.
6. Law of lanes: if you change lanes in traffic, the one you were in will start to move faster than the one you are in now.
7. Law of likeability: as soon as you find a product that you really like, they will stop making it.
8. Law of close encounters: the probability of meeting someone you know increases when you are with someone you don't want to be seen with.
9. Law of the result: when you try to prove to someone that something won't work, it will.
10. Law of biomechanics: the severity of the itch is inversely proportional to the reach.
11. Law of carpets: the chances of an open-faced jam sandwich landing face down on a floor covering is directly correlated to the newness, color, and cost of the carpet.
12. Law of logical argument: anything is possible if you don't know what you are talking about.

From the Sierra Flyers, Marysville, CA

Tools for Beginners

Jim Kitchen, editor

A beginner does not need a lot of fancy tools to do a good job. However, there are a few inexpensive tools that make life easier.

- X-acto blade and holder, usually a number 11 for most jobs.
- Coping saw
- Razor saw to cut across grain and hardwood.
- T-pins. They come in three sizes, but generally the small and medium sizes are the most useful.
- 18-inch steel rule is very handy. If the rule tends to slip when using, try spraying with 3M-77 on the down side. Once dry, it acts as an antiskid.
- 90° plastic triangles: For squaring assemblies. (Video cassette boxes are square, will stand alone, and are very useful for holding two parts such as a horizontal and vertical stabilizer when assembling).
- Sandpaper: Aluminum oxide sandpaper is best. This is sold at auto paint stores, has a long life, and is often less expensive than what is found at hardware and model stores.
- Sanding blocks: Always use a sanding pad or block. Various lengths of suspended ceiling tile grid make good, light weight sanding blocks. (Use 3M-77 spray or rubber cement to attach sandpaper strips to a sanding block. Use a heat gun to loosen the adhesive when it must be replaced).

CALENDAR OF EVENTS

CLOVIS OKTOBERFEST FLY-IN

MADS CLUB FIELD

OCTOBER 7, 2006

25TH ANNUAL ANGELO RC FLY IN & SWAP MEET

SAN ANGELO CLUB FIELD

OCTOBER 14 & 15, 2006

For Sale:

Chip Hyde Double Vision Biplane – Includes fuel tank, fuel dots, control horns, and switches. \$400.00 Call Rick Strange

On his cell phone: 553-3627

Top Flite Spitfire kit..... 0.60 size... Complete NIB \$75.00

Top Flite Airacorba kit... 0.60 size with cockpit kit. \$75.00

World Models Clipped Wing Cub (electric power) ARF new in box. \$60.00

Horizon Hobbies PT-19 (electric power) ARF never flown. Almost ready to go. \$60.00

Contact Bill Coombes at 689-8359 or email at:

snj24@earthlink.net

Hitec CG-335 NiCd charger (4 to 24 cell packs) \$40.00

Goldberg Cub with 2 servos in wing. Ready to fly \$120.00

Henry Smith at 570-6262 or: hksmith35@prodigy.net

Opportunity is missed by most people because it is dressed in overalls and looks like work.

Thomas A. Edison

Minds are like parachutes – they only function when they are open.

Thomas Dewar

I'm trying to matter.

June Carter Cash

overlooked it once, you'll probably miss it again.

Improperly Located Center of Gravity:

There's an old saying in this hobby that says "A nose-heavy airplane flies poorly; a tail-heavy airplane flies once. " Most beginners fail to appreciate how big a role balance plays in the performance of an airplane. Balance is important in full-scale airplanes, but it's even more important in RC aircraft, where an inch or so can make the difference between a model that flies well and one that's unmanageable in the air.

Most construction manuals specify where the model's center of gravity (CG) should be located, and a model shouldn't be considered complete until you've ensured that the CG is at or near the recommended location. If necessary, you can add a few ounces of lead to the nose or tail to achieve the recommended CG. Often adding lead isn't necessary; you can achieve the desired CG by moving the receiver battery backward or forward.

Be certain to check the airplane's CG before flying it for the first time. I usually mark the location of the manufacturer's recommended CG with short pieces of trim tape. That way I can check the CG even if I don't remember precisely where it's supposed to be. Assuming your aircraft's fuel tank is on or in front of the CG, be sure to check the CG with the tank empty. Finally, if your airplane has retracts that fold backward (like the F4U Corsair) check the CG with the wheels up.

Deploying the gear prior to landing will move the CG forward, but it's better to be nose-heavy during landing than tail-heavy during flight.

Inadequately Charged Batteries:

If you crave excitement, try flying your favorite airplane without charging the receiver battery. To double the fun, don't charge the transmitter, either. Then you can take bets on which will fail first. Joking aside, charge those batteries before flying, and check them at the field if you're not sure whether they're charged.

Most transmitters have built-in voltage meters; I don't fly if the voltage is less than 10 volts—just to be safe. You can check receiver batteries with an inexpensive voltmeter (which should be part of every flight box), or you can install an onboard voltage indicator like the Hobbico VoltWatch. Remember—low batteries lead to dead airplanes. This is one case where an ounce of prevention is worth a pound of cure.

Son, always tell the truth. Then you'll never have to remember what you said the last time.

Sam Rayburn

A man has to live with himself, and he should see to it that he always has good company.

Charles Evans Hughes

Today is the tomorrow you worried about yesterday.
Anonymous

AMA District VIII SAFETY

By Jim Rice

Just a quick introduction: I am Jim Rice (AMA L463) and Dr. Sandy Frank has appointed me the interim District VIII Safety Director due to the unfortunate illness of Mr. Don Nix. I will fill this position until elections are over and a new District VIII Vice President is selected and takes office. I am a modeler of 57 years and have flown RC since 1957. I was in the Army for 26 years and currently own a Hobby Shop in the San Antonio area. I have spent countless hours at flying fields and have participated in many contests and air shows. None of that is to say that I am a good pilot. All of it is to say I have seen innumerable accidents or near accidents and have become focused on the aspect of modeling safety in the past several years. As a flight instructor, the 1st hour of every new student's training is a safety and flying field etiquette briefing. Even before my new appointment, I became proactive in trying to increase safety awareness at the fields that I frequent.

I intend to publish a monthly article on the web site about safety. It will be short enough for newsletter editors to duplicate it in their monthly efforts if they wish. It will likely consist mainly of my own ramblings about safety incidents or suggestions to improve safety throughout the hobby. I solicit input from everyone for inclusion in this effort. It is my hope that all modelers in the district who read these Safety Notes will pass the information around to those who haven't read them and that they will take a look at local operations with an eye toward improving safety. At no time do I intend to embarrass anyone by my examples or descriptions of incidents. However, most of the things I discuss will be actual incidents with either no names or fictitious names attached.

July 2006 District VIII Safety Notes

Recent deaths in Hungary and serious injuries in the United States caused by RC aircraft and boats should peak everyone's interest in the safe operation of our hobby equipment. It is not always the other guy or the other club that has the accident. It can happen to you and your friends and will happen when you least expect it. After addressing one of our local clubs on safety, I was approached by Mr. John Haire who is a retired USAF pilot and a local modeler. He gave me a piece of wisdom that I already knew but had never heard put in the words he used. I hope I do his idea justice here. His comment was that you can generally tell when an accident is about to occur because something out of routine is happening. All pilots and clubs have routines and as long as the routines stay intact we remain fairly safe (assuming it was a safe routine). For example, everyone is flying and having a good time when someone announces Dead Stick. The routine is broken and we all turn our attention to the airplane and pilot that has made the announcement. We all know his routine is broken and there is potential for a crash or other incident. Another example is a friend who was competing in and winning a contest on the 1st day. On the 2nd day as he put his airplane together, he was inundated with questions about his airplane. He was answering questions and continuing to work but had to stop his efforts several times to gesture and show things which were out of his normal routine. After he assembled the airplane, his turn to fly came and in the heat of the competition moment, he did not check all controls before take off. His ailerons were not connected and fortunately, only his pride and aircraft were broken. They were broken because of a broken routine.

Just last month, another friend of mine came to the field and he had not flown in several months. I taught him to fly so I knew his routine and in fact I drilled a pre-takeoff checklist into him. (I will make that check list part of a later safety note). As he was starting his engine and preparing to fly, I noticed some faltering in his normally smooth preflight procedures. He seemed to be thinking more trying to remember things that were somewhat distant. As he took his plane from its restraint and stood at the pilot station, I could see him going through his mental checklist but I noticed that he missed the "antenna up" part of the list. I started out to the flight line to advise him to pull his antenna out but before I got there he went back through his checklist and pulled the antenna out. The point is that I could tell he was out of his normal routine which caused me to watch him more closely than I would normally that I could help if needed. He also knew he was out of routine so he started over and fixed his problem. Having a routine is good and noticing that you or someone else is out of routine can head off an incident.

A final comment on routines, new pilots do not have well established routines. Experienced pilots need to help them establish safe routines and encourage them to use them every time they come to the field. For example, if a new pilot decides to attempt a 1st test flight; join them in the assembly of the airplane, helping them in a thorough preflight inspection including CG and control checks. Stand next to them as they prepare to fly. Understand that their routine is being interrupted by nervous twitches and shaky hands and they might forget part of their pre-takeoff routine. Be prepared to remind them about dual rate switches, timers, antennas, or wind direction. Years ago, in the single channel days, my Dad was about to hand launch an airplane for a new guy. It was his 1st test flight. As Dad held the 6 foot model with the engine running over his head for the launch; he looked back at the pilot and yelled is it on? Meaning is the radio on and working. The young man nodded nervously and motioned for the launch so Dad ran out and tossed the airplane. It flew straight away without any trim needed but as the guy tried to make his 1st turn the airplane continued straight away. The airplane did not respond because the switch was not turned on. After they chased the airplane down and returned to the flying field, Dad asked him why he said yes when asked if it was on and the newbie said?..I thought you meant the engine. Another routine needed established or was broken-- I don't know which. Unfortunately, RC airplanes flying away were the routine in those days.

If you have comments or input for me, please direct it to: JorLRice@aol.com

Be Safe!

This was used by permission of Jim Rice.

The Basics of Electric Flight

By: Pat Tritle

I really enjoy getting together with Clubs and speaking to the group about the basics of electric power. But do to the fact that there is so much information that needs to be passed along that it would be difficult, if not impossible for those attending to remember much of the pertinent information. For that reason, it's better to write up the basic guidelines so that those interested in getting into electrics would have the information available for reference at a later date. So here goes. I'll keep the numbers as simple as possible to avoid unnecessary confusion.

OK, here's how it all shakes out. The basic power required to fly an electric model is as follows;

Direct Drive Systems- 60 Watts/lb.

Gear Drive Systems- 35 - 50 Watts/lb.

For mild aerobatic performance; 70 - 80 Watts/lb.

For all out aerobatics; 100 - 110 Watts/lb

3D performance; 150 Watts/lb. or more

The above numbers are based on models with wing loadings from 8 – 16 oz./sq. ft. As with gas models, higher wing loadings require more power since they must fly faster to support the added weight. By the same token, a lightly loaded model with a wing loading in the 3 – 5 oz./sq. ft. range will fly very well at 25 -30 watts/lb.

So, *what's a "Watt", and where can I get some?* Wattage is the term used in electric flight to relate the level of power that an electric drive system will produce. To relate it to terms we're familiar with, 746 watts = 1 horsepower. To calculate the wattage delivered by a given system looks like this; Amps X Volts = Watts. So where do these numbers come from, and how do I know how many Volts and Amps are needed to fly a given model?

OK, let's say you want a mildly aerobatic sport model with a 14 oz./sq. ft. wing loading that will weigh in at 2 lb. We already know that the power requirement for a model like this is about 70 Watts/lb, so we're going to need to generate about 140 Watts. Let's assume that you are going to use an 8 cell NiCD battery. At 1.2 Volts per cell, 8 cells will deliver 9.6 volts. To arrive at the necessary current draw to achieve 140 watts, simply divide 140 (watts) by 9.6 (volts) and we arrive at 14.58 Amps.

Now, let's assume that you have a 3 cell Lithium Polymer battery for the model, which is rated at 11.1 Volts. The formula is the same; 140 (watts) divided by 11.1 (volts) = 12.6 Amps. As you can see, as the available voltage increases, the lower the current draw needs to be to deliver the necessary wattage.

Now here's something to consider when selecting your system – The **higher** the **current draw** the **shorter** the flight **duration** will be on any given battery. So the ideal set-up would be to use a higher voltage battery, with lower current draw for maximum duration. On the downside, when using NiCD and NiMH batteries, as the cell count goes up, the weight will increase significantly as well. It works that way with Lithium too, but Lithium batteries are dramatically lighter than the old "round" cells.

OK. Let's say we're going to use an 11.1 Volt Lipo battery. All we need to do now is select a motor that will swing enough prop at 12.6 Amps to fly the model at a top speed of around 40 – 45 mph and we're in business. Now that you know the parameters, visit your LHS and select a motor that will fit that description.

Gear Drive vs. Direct drive, and why is one better than the other? Well, it all depends on the kind of performance you're looking for. If you're looking to go fast, go with direct drive. Going fast requires a high pitch propeller turning high RPM. The formula to calculate propeller pitch speed is an easy one, it looks like this;

$\text{RPM} \times \text{Pitch (in inches)} \div 1056 = \text{MPH}$

Let's say that you are turning a 7-6 prop at 14,000 RPM. $14,000 \times 6 = 84,000$ divided by 1056 = 79.55 MPH

Now, let's assume you are setting up a slow, relaxing Park Flyer with about a 5 oz./sq. ft. wing loading. If we swing a 9-7 prop at about 3500 rpm we'd be looking at a top speed of around 23 mph. To swing that much prop with a small light drive system we would use a gear drive unit at a very low current draw and a small light battery.

Again to make a known comparison, we can relate all this to riding a 10 speed bicycle. A gear drive swinging a big prop is like riding your bike in low gear. You pedal like mad with little effort, you don't go very fast, but you can climb steep hills with ease. The direct drive system could be compared to riding the bike in high gear. It'll really go fast, and even though you're pedaling slower, it requires considerably more effort.

What all this boils down to is “propeller disc loading”. We all know what wing loading is; it’s the amount of the model’s weight that each sq. ft. of wing must carry. Prop disc loading works the same way. A large prop will be more lightly loaded, thus delivering more torque than a smaller prop turning high rpm. The trade-off, of course, will be speed.

One more thing to cover and we’ll give you a rest. Batteries are rated in “voltage” and “amperage”. Voltage dictates the amount of power the battery will deliver. The Amperage rating dictates for how long the battery will deliver that power. To relate that to glow fuel, consider the Voltage as Nitro content. High Voltage (Nitro) means more power. The Amperage is related to the quantity of fuel, or simply, the “size of the tank”.

To figure the size battery needed, let’s go back to our 140 Watt sport plane. If we’re pulling 14 Amps from a 1400 MAH (1.4 Amp Hour) battery, we will have a full power duration of 5 – 6 minutes. In the real world, with proper throttle management, you’ll see flight times of around 7 - 8 minutes. Pretty common flight times, even with liquid fueled models.

To arrive at that number, divide the battery amp rating by the current draw. $1.4 \text{ (Amp Hours)} \div 14 \text{ (amps)} = .1$. Then take 60 (minutes per Amp Hour) $\times .1 = 6$ minutes. Now, to double the duration you must either cut the current draw in half (to 7 Amps), or double the battery size (to 2800 mah or 2.8 Amp Hours) – again we see trade off’s. To reduce the current draw we can use a gear drive with a larger, higher pitch prop turning slower with very little weight penalty. If we double the size of the battery capacity, the weight penalty is quite high, unless we go over to the new Lithium batteries, in which we will discover we have benefited from a tremendous weight reduction, but at a higher price than conventional batteries!

OK, I promise I’ll quit, before we all end up in “system overload”. Once again, there’s a tremendous amount of information here for a newcomer to electrics to digest, so let’s do this. If you have specific questions about setting up an electric model, please feel free to drop me a line and I’ll do what I can to steer you in the right direction. But for now, I’ll offer up one last piece of advice. To get started, work with a known good design, and use the recommended equipment that has been proven to work. Talk to the guys who are successful and copy what they’re doing. The one thing I do know about modelers is that they are always willing to share their knowledge with those interested in what they’re doing.

Pat Tritle
505-296-4511
patscustommodels@aol.com

Editor’s note: This was published in the Rocky Mountain Flying Machine club’s newsletter. They are in Albuquerque, NM. I sent Pat an email about including his article in our club’s newsletter. He responded with a file ready to insert in our newsletter.