March 2010

AMA #197

IMAA #687

Glitch Busters

Next Club Meeting:
Tuesday
March 2, 2010
@
Newark Senior Center
7:30pm

Inside this issue:

Please keep our flying site clean by removing all trash and debris when you finish flying for the day!

The Prez Sez

Sadly, this month saw the passing of the last of our founding members; Bob Scott. Bob was a member when the club was called "Lost Controllers" and flew in the 1954 and 1957 NATS. After a long career with the CIA, he returned to the area from Virginia in 2006, and many of us got to know him well. His eagerness and friendly attitude will be sorely missed.

On a much happier note, I am proud to announce the election of Richard L "Dick" Stewart as a recipient of the Life Time Achievement Award. This grants Dick permanent membership in the club and recognizes the great benefit he has been to the club over the 34 years that he has been a member. Aside from his passionate support of the various events like the Annual Auction and Warbirds, he was Club Treasurer for 8 years, and served as President in 1979. Dick has always been available to take on tasks that further the fortunes of the club and can be counted on for participation in most meetings "Show-and-Tell" session. He is an avid builder and collector of all things connected to model aeronautics and freely shares his experience and expertise. Congratulations Dick! I am happy that you have been formally recognized for your efforts!

E. Andrew DiSabatino Jr. of EDiS has contacted us, looking for a volunteer to fly RC airplanes at their new Wilmington Organic Recycling Center to analyze the effectiveness of controlling the pesky sea gulls without harm. The area is 27 acres of mostly paved property under I-495. I am looking for suitable volunteers to do a demo for them. There is also the possibility that this could develop into a flying site for one of the local clubs.

Remember, the Lebanon Flea Market at the Lebanon Fairgrounds is coming on Saturday, March 13th. Sell your unwanted stuff and/or get new stuff for the upcoming season. Bargains are always available!

The Board of Directors was formed to do the business of the club, and "shall have the authority to establish and administer its policies"

I welcome anyone who has something to add to the purpose of the meeting to attend, especially those who wish to volunteer their services for the good of the club. Therefore, I will hereafter publish the time and place of the board meeting on the Yahoo! Group distribution. We meet on the third or fourth Tuesday at 7:00 at Arner's Restaurant near the New Castle Airport. If you plan to come, please tell me so we can set a bigger table. Most of us partake of the famous pie and coffee while meeting, but meals are available.

John

Charles Robert “Bob” Scott

Caption: Members of Wilmington club check out a radio plane. They are President Charles R. Scott, Secretary Betty Cantera and Graham Lomax. *Reference:* “Glenside News” Newspaper, May 10, 1956.

N/L Editor - Left to right: Mike Hudak, Bob Scott, Betty Cantera, Graham Lomax, Bill Davis. The above photo was taken during a “Radio Controlled Model” Forum held Saturday evening, May 5th at the Weldon Firehouse Auditorium, Glenside, Pennsylvania.

Published: Friday, February 12, 2010 in the Daily Local News - Charles Robert "Bob" Scott, of Kennett Square, passed away on Monday, Feb. 8, 2010, at Chester County Hospital… Bob was born April 23, 1927, in Seymour, Ind. He was the fourth of four children born to Gordon and Halle Scott. This is where Bob, at the age of 8, first learned to fly model airplanes, which became his lifelong passion. He started out flying models on strings in a circle until he graduated to radio-controlled airplanes that he had to build first and then fly by remote control. Bob loved flying his model planes more than just about anything. He flew every chance he could. He was a member of AMA, American Model Aeronautics, for most of his life and participated in every contest he could. He held the world speed record for years...

Photo provided by: Dick Stewart, Contributor

Delaware R/C Club Meeting Minutes

General Membership Meeting of the Delaware R/C Club

Tuesday February 2, 2010

- President John Kirchstein called the meeting to order at 7:30PM.
- Guests and New Members: Mr. Zappo is interested in becoming active again in the hobby. Stan Kaminski flew years ago and is just getting back into the hobby.
- Show and Tell: Eldon Hamrick brought a Top Flite Contender which is still under construction and is powered with an OS-55, 2-cycle. It will have a 2.4GHz radio sys tem along with a flap setup and raised wing tips.

  Richard "Dick" Stewart brought a Great Planes Fairchild PT-19 EP ARF with a 2830, 950 Kv motor, and 4 channel radio with a 2.4 GHz Airtronics receiver.

  Secretary Stanley Michalski brought his Cessna Skymaster, twin, push pull. It flies well and has some unusual features. He also spoke a little about chargers and their wattage ratings and how it impacted their capability.
- Treasurer's Report: Mark McQuaide gave the Treasurer's report.
- Old Business: Pilot stations were discussed as to weather they should be put back into place or not. The fence is going to be put up with openings so as to provide some protection for pilots while flying.

  President John Kirchstein announced the possibility of some indoor flying at St. Mathew's Hall. Silent Knights is sponsoring the event.

  Further discussion was held on getting electric at our field. Brian Pasternak was looking into using solar. Stanley Michalski is going to go back to Delmarva to see what can be done by Delmarva to help defray costs.

  President John Kirchstein spoke with the Park Rangers about the outhouse bandit. The park wants to catch this guy.
- New Business: Richard "Dick" Stewart was awarded a well EARNED Lifetime Achievement Award. See page 5…

  VP Greg Schock is looking into making some more safety stands like the one we have at the field. It would be of great assistance to flyers with back problems.

  Night flying will be allowed on a trial basis. If it works out it will be permanent.

  President, John Kirchstein said Board Meetings are open to all members to come and voice their opinion.
- Safety Report: Safety Officer Preston LeSage talked about park flyers at our field. It should be noted that a sport flyer needs a full AMA membership, not a Sport Flyer membership, to fly at our field. He suggested that we be proactive to intercept these new members and offer to assist them.
- Meeting was adjourned at 8:50PM.

Submitted by: Stan Michalski, Secretary

Show and Tell Gallery

Photos by John Kirchstein & Greg Schock

Eldon Hamrick with his Top Flite Contender, powered by an OS-55, 2-cycle.

Secretary Stanley Michalski with his Cessna Skymaster, twin, push-pull.

Richard “Dick” Stewart with his Great Planes Fairchild PT-19 EP ARF.

President John Kirchstein presents Richard L. Stewart with a Lifetime Achievement Award.

Richard L. Stewart - Lifetime Achievement Award

Photos by Greg Schock

Congratulations on a well earned

Lifetime Achievement Award

Richard L. “Dick” Stewart

Inscribed

Delaware R/C Club

Lifetime Achievement Award

is presented to

Richard L. Stewart

for outstanding contributions

to the Delaware R/C Club

and the

model aviation community

February 2, 2010

3-D Aerobatics

From the Mid Atlantic Radio Kontrol Society, Snow Hill, Maryland

By Jeremy Chinn

Learning to 3-D and 3-D Well: A building blocks approach.

Radio Controlled Aerobatics has always been one of the most exciting elements of the RC airplane hobby. This discipline combines the challenge of coordinating all the available inputs of your airplane correctly and precisely to ensure that it does exactly what you want at exactly the correct time. Get one of those inputs wrong or out of order and the result is ugly, and often disastrous.

As the hobby progressed through the years, so did the complexity of the aerobatic maneuvers. Modelers spent countless hours attempting to emulate their full-size counterparts and their movements through the air. IMAC competition even goes so far as to require that you fly a model of a full-sized aerobatic competition airplane. Modelers were always trying to get their models to perform at the same level as their full-scale counterparts—most of the time they were short of success.

Then at one of the final installments of the Tournament of Championships, QuiQue Somenzini pushed RC Aerobatics to another level entirely. QuiQue flew a model that greatly outperformed its full-sized counterpart and flew maneuvers that full-scale pilots could only dream of. With that, the seed for 3-D aerobatics had been planted and nothing would hold it back.

3-D aerobatics is now the most popular form of flying in the RC hobby. Manufacturers frequently throw the moniker “3-D” at any and every airplane they sell. Competitions just for 3-D have cropped up around the country and many specialists have popped up that spend all their time flying 3-D aerobatics. Videos flood the internet on a weekly basis of some pilot flying 3-D with his new “uber-wonder-plane.”

With all that interest, the hobby has a very large number of people trying to learn to fly 3-D. These students of 3-D are trying very hard to learn to fly one or more of the cool new maneuvers they’ve seen some sponsored pilot fly at a competition or on a YouTube video.

Unfortunately, many of these pilots are finding limited or no success. Broken airframes are common and heading home from the field with a multicolored bag of broken airplane parts is often the name of the game for the new 3-D pilot.

So what are the keys to success for the aspiring 3-D pilot? What is needed to ensure that a pilot can find success in learning to fly 3-D and do so without breaking the hobby-money bank? In no particular order, they are:

1. Strong knowledge of basic aerobatics.
2. Use of a structured approach to learning each of the 3-D maneuvers.
3. Use of a simulator to help speed the learning process.
4. Proper 3-D “trainer” to learn each of the maneuvers.

Why is a strong knowledge of basic aerobatic maneuvers necessary? So many times when I get asked by a friend at the field or at an event how to do a rolling harrier, I quickly find out that the person asking cannot fly a proper slow roll or even a four-point roll. It's this basic aerobatic knowledge that helps to provide the right understanding and muscle memory to handle unusual flight attitudes and situations. In many ways, it is similar to wanting to learn to run before you learn to walk.

I won't spend a lot of time trying to describe how to learn basic aerobatics—there are many more qualified pilots out there to do that, but here are a few good tips:

1. Participate in a local AMA Pattern or IMAC competition. The skills you build while practicing even the basic or sportsman routines will be invaluable to your future aerobatic and 3-D efforts.
2. Learn to fly all the basic maneuvers such as four-point rolls, rolling circles, and loops in both directions. Even the best pilots have a bias toward rolling one direction or the other, however, they have practiced until that bias is invisible to the spectator. Always practice your worse side more.
3. Learn to trim the airplane properly as part of your basic aerobatic learning. A properly trimmed airplane is easier to fly while doing aerobatic maneuvers from the most basic to the most complex. This same reasoning applies to flying 3-D as well.
4. The book *Learning to Fly Basic Aerobatics* by Scott Stoops is an excellent read on the subject.

A structured approach is the next item on the list. Again, this is similar to learning to walk before learning to run. By learning each fundamental maneuver, you will have a better chance at finding quick success as you learn to fly 3-D. The next article in this series will begin to cover the details of an excellent "building block" approach to learning to fly 3-D.

Simulators are one of the most underrated tools and developments in the RC hobby during the past 10 years. Quality and reality of simulators has increased with the same quantum leaps that computers have undergone. There are many simulators out there, and each has its own pluses and minuses. To try and discuss that subject would be many articles in and of themselves. Rather than try to cover that, I'll try to suggest some tips to help you get the most out of your simulator and a training method that can be used with most any simulator to learn quickly and efficiently.

Some basic tips that will help you get the most out of your simulator:

1. Don't obsess over flying a particular airplane in the simulator. Instead, try to get an airplane that flies well in the simulator and tune it to your liking. Don't decide you're going to learn to fly 3-D in the simulator with an F-14, but at the other end of the spectrum, don't worry if the Extra 300 in your simulator flies better than the Yak 54; fly what works!
2. In general, larger simulator models fly more realistically in the simulator than smaller models do. This is a generalization, but has proven true with every simulator I've experienced.
3. Learn how to "tune" your models in the simulator to fly more like your real models.

Almost all simulators allow you to edit the characteristics of the models included in the simulator package to suit your needs and to make them fly more like real life. Do not select an airplane in the simulator that is too easy to fly. It is supposed to be a challenge.

4. Learn to use the “time” functionality in your simulator to slow things down. This ability to slow down simulator life when compared to real life is one of the best features of flying in a simulator.
5. Fly your model in the simulator just like you would fly your real model. Go through your same take off routine and landing procedures just as you would in real life.

As mentioned earlier, the ability to “slow time down” is one of the most valuable features of the simulator. Slowing down the time function in the simulator allows you to fly maneuvers at a slower pace. Flying at a slower pace allows you to think through each of the required stick movements and corrections as you learn the maneuver. More time to react to incorrect movements is always a good thing as well.

When you decide to learn a maneuver on the simulator, start by turning down the time function to approximately 50% of real time. Practice the maneuver over and over until you feel comfortable with it. Once you feel comfortable at that speed, bump the speed up in the simulator by 10% and practice more. Continue this cycle until you are actually flying the maneuver 10% faster than normal speed. By the time you have accomplished this, you will have built the muscle memory necessary to ensure you provide the correct inputs at the correct time to fly your model. You are now ready to try it out in the real world!

Another key to 3-D success is getting the right airplane to learn with. If you’ve followed along so far with this article, then you’ve practiced up on the simulator and you are ready to try out the maneuvers in real life. Unfortunately, having the wrong airframe will mean many will fail at this point and won’t progress any further.

The right airframe has to do many things. It must be tough for the unintentional mishaps that will happen, it must be simple to repair, and above all, it must fly 3-D very well. The two airplane types that fit this bill very well are foamies and .40-size profiles. Both types of airplane have a relatively low cost to build and, as a result, a relatively low cost to repair. Those factors alone mean you’ll spend more time in the air than repairing at the workbench. Finally, there are countless examples of both type of airplane which fly exceptionally well. If you are put off by the appearance of a profile, get over that issue and use one to learn to fly 3-D, then sell it to a buddy so he can do the same.

A few types of airplane to avoid for learning to fly 3-D:

1. Giant Scale airplanes are very bad 3-D trainers. Most Giant Scale airplanes are easier to see and fly somewhat slower than smaller airplanes. However their higher cost and higher complexity adds significantly to the fear that many pilots will have when flying them. It is difficult or impossible to learn a new skill when you are faced with constant fear of hurting the airplane.
2. .40-size full fuselage airplanes also make poor 3-D trainers. Most examples in this category have cost and complexity induced fear similar to giant scale airplanes mentioned above. Additionally, they typically have very high wing loadings when compared to a same sized profile airplane. The result is an airplane that flies poorly

2. and is difficult to repair when damaged. Again, a bad combination for someone who wants to learn to fly 3-D.
3. Small, full fuselage electric airplanes. This category of airplane has become extremely popular with the increased availability of good quality electric gear, motors and batteries. Unfortunately, the comments for the two airplane types mentioned above apply very strongly to this category as well.

So that is our starting point. Get the right gear and get ready for the next session.

Delaware R/C Club to sponsor the 3rd annual Lums Pond IMAC Challenge

The 3rd annual Lums Pond IMAC Challenge is June 5-6. The field is open Friday, although, some contestants may be practicing. The field is closed Saturday and Sunday. All club members are invited to participate in the contest. Anyone looking for coaching in flying the IMAC sequence should contact Mark McQuaide or Jake Ruddy.

Spread Spectrum Radios

Spread Spectrum Radios, PCM Radios, FM Radios, AM Radios:

What are the differences and which is better?

Spectrum Radio

2.4 GHz spread spectrum radios have taken the RC world by storm. In a few years time, I predict this will be the only technology that will be offered on everything but the cheapest toy grade RC radios.

So what is spread spectrum radio modulation and why is it so good? To answer this question, let's first look at the other "narrow band" modulation methods – AM, FM, PCM.

AM, FM, and PCM all use narrow band radio transmission. This simply means they transmit a signal on a specific frequency within the radio spectrum. This is exactly the same way AM and FM radio stations broadcast and is why you have to tune into a specific frequency (radio station) to get reception. The RC world uses radio frequencies in the 27 mega hertz (MHz) to 75 MHz range. Most hobby grade RC aircraft used the 72 & 75 MHz band range of the radio spectrum.

For your RC radio system to work, the receiver must be tuned into the exact same frequency as the RC radio, this allows several models to be flying at once provided they are all on different frequencies within the allowed band range. Over the years, technology has made it possible to "cram" more frequencies into this specific 72 & 75MHz range, but space is limited, and there lies the problem.

With only a few dozen channels or so available, it is very important that only one person be transmitting on a specific channel at a time. This is what frequency boards and pins at RC flying clubs are used for. When it is your turn to fly, you take the frequency pin off the board and

this lets others know that frequency is in use.

Simple in principle, but with more and more people flying RC and computerized radios that need to be programmed, there is always the possibility that another RC radio on the same frequency will accidentally be turn on while you are flying – interference and crashing is the result.

Spread spectrum radios as the name suggest are not bound by narrow band frequencies; they spread their radio signals out over a large range of the radio spectrum. They also use a much higher frequency range 2.4 GHz. That is a frequency of 2.4 billion cycles per second. This is well beyond the range of most RF (radio frequency) generated noise that occurs below 300 MHz making 2.4 GHz much more immune to interference issues. Before I get going on exactly how a spread spectrum radio works, let's first look at how narrow band RC radios transmit their signals.

AM RC Radios

AM stands for amplitude modulation. This is the most basic and very first method used for controlling RC models. AM RC radios send information to the model by changing the amplitudes of a base carrier wave at a specific frequency.

It is then a simple mater for the receiver to filter the highs and lows of the changing amplitudes of the carrier wave into usable information. The problem is it is really easy for those amplitude highs and lows to be affected by almost any electrical noise generating device.

Any type of electrical or metal on metal noise from lighting to car ignition systems will result in interference (just listen to an AM radio station while an electric motor in your house is running or an electrical storm is approaching – big time noise).

It is all these sources of interference that will cause loss of control issues on your RC model. This holds especially true for all types of RC helicopters with the many metal on metal contact points, electronic speed controllers and motors in electric RC helis, and high voltage ignition systems on gas powered RC helis.

Bottom line – stay away from AM RC radios for RC helicopters at all costs. I guarantee you will have interference issues. Yes I know this from experience.

FM RC Radios

FM stands for frequency modulation. It is also referred to as PPM – Pulse Position Modulation and was introduced commercially to the RC aircraft world in the early 80's.

FM sends information by changing the frequency of the radio wave instead of the amplitude. Because the receiver is now looking for changing frequencies instead of changes in amplitude, any electrical noise source that changes the amplitude of the carrier wave simply won't be seen by the receiver.

I started out using a FM RC radio on my first nitro helicopter and it worked OK most of the time. However, there are many rotating parts than can sometimes send out electrical noise that can be interpreted by the receiver as a legitimate signal and cause a "glitch". So every now and then the heli would twitch. If the glitch was bad enough or lasted more than a few sec-

onds... well you get the "ugly" picture. Yup - I moved up to PCM 15 years ago and have never looked back.

PCM RC Radios

PCM stands for Pulse Code Modulation and works by embedding a digital signal within the basic FM radio wave. A digital processor chip inside the RC radio will encode a digital transmission and send it out on a standard narrow band FM carrier wave. The receiver also has a processor chip that decodes this digital data back into a usable analog signal for the servos.

Think of this like hearing a bunch of people talking to you in different languages but you only understand one of those languages. Our brains have the ability to filter out all the other noise and only respond to the information from the language we know and understand.

This method all but eliminates any glitching caused by electrical noise because unless the receiver “hears” a digital command that it understands, it won’t respond. It is this ability to ignore outside interference that makes PCM so perfect for all kinds of RC control – especially for helicopters. This brings us to the topic of “Fail Safe”.

Like I just mentioned, a PCM RC radio receiver can ride out interference because it doesn’t understand it and simply ignores it. This makes it possible to add a secondary feature to that ability. Fail Safe is a safety function that allows you to “tell” or “teach” the receiver what to do if it no longer sees or understands the radio signals it receives.

No, this doesn’t mean the receiver is capable of flying and then landing your helicopter if there is radio signal corruption, but it will move the servos to a predetermined value. For safety reasons that usually means throttle off and all other control functions at neutral.

These fail safe servo settings are programmable, but the idea is to make sure if you do loose radio communication with your RC helicopter, to have it come down in a way that is least likely to cause excessive damage to your heli or hurt people. This doesn’t mean that the helicopter will absolutely crash if the radio signal is lost – the receiver will continue listening for the digital data and if reacquired, control will be regained.

So does all that mean that PCM RC radio systems are immune to interference? I am afraid not. If another PCM radio is transmitting on the same frequency, you will certainly get interference – your receiver will see conflicting signals.

Even a standard FM (PPM) RC radio will cause loss of control issues if it’s on the same frequency. Your PCM receiver won’t understand this FM noise of course, but it also won’t be able to “hear” your PCM radio’s digital voice over all the noise – it goes into fail safe mode and if the interference doesn’t subside - once again, by-by-birdie.

Let’s go back to the illustration of all those people talking to us in different languages. If there are too many and it is too loud, you can’t hear the person talking to you in your own language right? Communication is lost.

Spread Spectrum RC Radios.

Welcome to the 2.4GHz spread spectrum radio REVOLUTION! No other advancement in RC radio technology has changed our hobby in such a profound and positive way. As big as PCM

was – it doesn't come close to the freedoms that all spread spectrum radios have.

Interference issues are all gone! No more frequency conflicts! No more Worries!

Actually, the RC radio world has been rather slow to adopt 2.4GHz spread spectrum technology considering it has been commercially available since the 90's with cordless phones, cell phones, and later wireless computer technologies such as Wi-Fi and now Bluetooth.

In fact, spread spectrum was invented during WWII to prevent radio signal jamming of torpedoes. Here is a very informative video of who actually invented it and how it came to be – you may be surprised.

The main idea behind spread spectrum is to spread the radio transmission out over a wide range of the radio spectrum" - thus the name SPREAD SPECTRUM. This makes a spread spectrum signal much less likely to run into interference or jamming issues that are common with all narrow band radio transmissions.

Even many spread spectrum radios all transmitting at the same time are very unlikely to interfere with each other as the spread of radio signals are random, changing, or coded. In most cases any signal conflict would happen for such a brief moment - you would never notice it.

How does it work?

RC spread spectrum radios use the same type of digital signal that is used in PCM giving all the same advantages that PCM has. The difference is how that digital signal is transmitted and received.

There are essentially two different types of spread spectrum modulation methods that have been developed – FHSS and DSSS.

Frequency Hopping Spread Spectrum – FHSS

FHSS was invented first and is exactly how the first WWII spread spectrum system worked. Frequency hopping, as the name suggests, transmits on a narrow band frequency, but changes the frequency of the transmission hundreds of times a second. For FHSS to work, the receiver has to know the frequency changing pattern so it can hop to the different frequencies in the same order and time frame as the transmitter does.

Direct Sequence Spread Spectrum

DSSS was invented later and is harder to achieve. Unlike frequency hopping, direct sequence as the name suggests uses a special code sequence and spreads data over a wide band width on a select frequency. DSSS is said to provide somewhat faster data transmission and shorter delays because the transmitters and receivers don't have to spend time switching to different frequencies. With the high speed micro processors of today, this is really not the issue it once was.

The speed of this data transfer and processing equates to latency. Latency is the elapsed time

between your movement of the transmitter controls and the servo response on the model. Reduced latency means faster response times.

These are very basic explanations of both spread spectrum methods and for most of us, it is simply enough knowing that the systems work and work well.

So which is better?

It depends who you ask and what spread spectrum radio manufactures web site you visit. You can read arguments for and against each method of spread spectrum radio control. I am not going to start a debate here – both the Futaba system and the Spektrum system work very well at riding out interference.

Futaba's spread spectrum radios use frequency hopping (FHSS) technology. Futaba's trademark name for their system is F.A.S.S.T - Futaba Advanced Spread Spectrum Technology. The FASST system hops or shifts to a different frequency every 2 milliseconds. The receiver has to be programmed to learn this unique hopping pattern so it can shift to the correct frequencies. This process is called "binding". Once bound, it won't accept any other pattern until it is re-programmed to a different radio.

Futaba claims the frequency hop method is better at overcoming signal conflicts or interruptions than DSSS (in theory this is true) and further improves reliability by seamlessly selecting the best reception between two separate receiver antennas.

Spektrum/JR's spread spectrum radios use direct sequence (DSSS) technology. Their system is called DSM and now DSM2 which stands for Digital Spectrum Modulation. It works by dividing the 2.4 GHz band into 80 individual channels (frequencies) and codes the direct sequence modulation with an imbedded GUID (Globally Unique Identifier) code for each radio. The receiver must then be programmed (bound) to this unique code so it only understands data from that specific radio.

Spektrum claims direct sequence modulation is more costly and harder to develop than the frequency hopping method (this is certainly true) and because the gain rate is higher, the range is improved. Spektrum/JR unlike other DS systems on the market selects and transmits on two different frequencies to avoid the possibility of blocked or corrupted signals. Spektrum/JR also has a range of dual receivers to provide better path diversity.

2.4GHz Limitations

You should know by now almost nothing in this world is perfect and spread spectrum radios are no exception. As I mentioned earlier, transmitting and receiving in the 2.4GHz high frequency range certainly gets you out of most human generated and natural occurring radio frequency (RF) noise that occurs below 300 MHz.

This is the reason modern spread spectrum radio equipment transmits in this range. Spread spectrum radio technology can be used with any radio wave length, but the GHz range is much less prone to noise.

You have probably also noticed that all 2.4GHz devices from cordless phones to spread spectrum radios have very short antennas. This is because the frequency or wave length is so

short, a short antenna is all that is required to transmit and receive it. This has made the long unsightly and usually difficult to route RC receiver antenna wire a thing of the past. It has also eliminated the long telescoping antenna that would always get bent on the RC radio.

So what's the issue?

Blocked and reflected signals.

Unlike the longer wave lengths used in 27-75 MHz RC radios that pass through almost anything, 2.4GHz short wave lengths are easy absorbed or reflected by many objects just like a light wave. Absorption and reflection of the 2.4GHz signal by parts of the model aircraft could lead to fail safe lock out of control if the signal is not strong enough for the receiver to hear or identify from shielding or reflecting.

This is not so much of an issue with fiberglass or balsa fuselages, but it can be a problem for RC helicopters that use carbon fiber or aluminum side frames.

The Solution… Diversity

As was previously mentioned, Spektrum/JR solves this problem by utilizing two or more receivers giving improved path diversity. By mounting several antennas in different locations and orientations in the model, even a couple inches apart, pretty much ensures at least one of these antennas will always "see" a clear signal.

Futaba deals with diversity by using 2 slightly longer antennas exiting one receiver and uses both antennas to scan for the strongest radio signal. In theory Spektrum /JR's method of multiple receivers/antennas is better, but in practicality Futaba's system seems just as capable.

Either way, the result is the same – redundancy. In the real aviation world redundancy is the goal of all aeronautical engineers... if one system fails; there is always a back up. Obviously this is why both Futaba and Spektrum/JR are the two clear "head and shoulders above the rest" leaders in the RC spread spectrum radio world.

You won't go wrong with either Futaba or Spektrum/JR spectrum radios if you are looking for the best in RC spread spectrum radio technology. I think after reading this, you now realize just how much better spread spectrum radios are over conventional narrow band RC radios and why these are really the only radio systems you should consider - especially if you are just starting out in this hobby.

Courtesy of rchelicopterfun.com

Park Passes for 2010 are payable online

The State of Delaware is now providing Park Pass purchases online (there is a $2 handling fee). You can go to www.destateparks.com and follow the links.

Park Passes are required from March 1st through November 30th.

Prop Noise and Prop Tip Speed

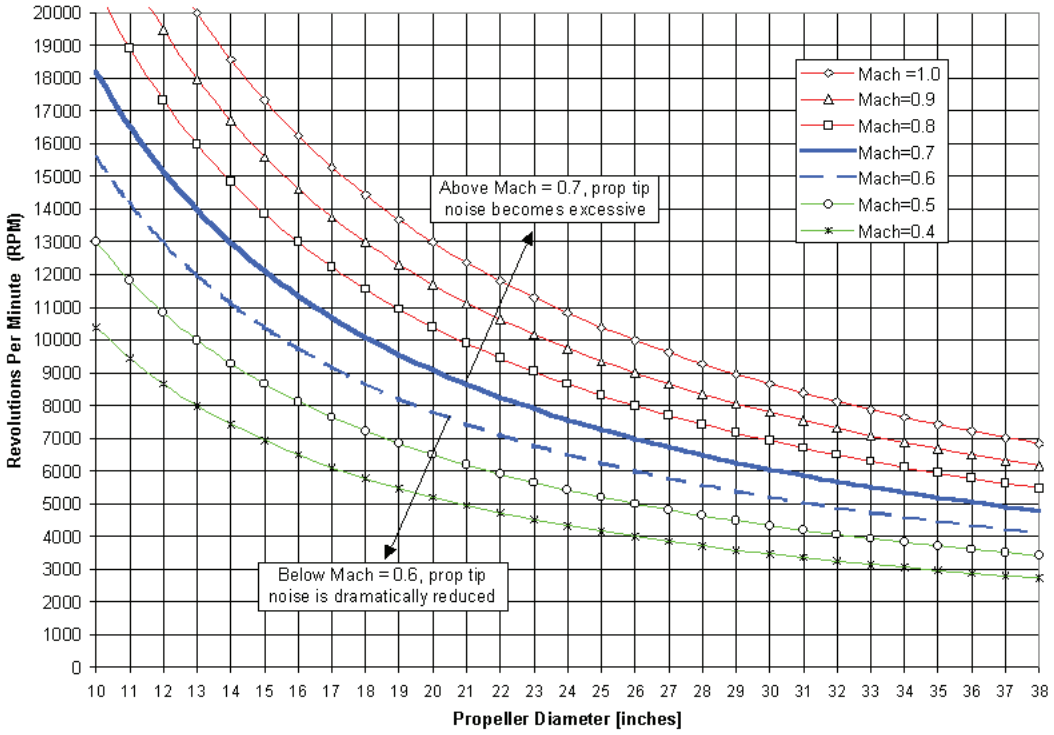
There are many sources of prop noise and they have varying levels of significance. The most annoying is the very distinct "shriek" that comes from shocks forming at the tips. The tip speed is a main factor in this noise source. The airfoil, shape, and thickness at the tip are also important since they define the Mach number at which compressibility effects begin to become significant. So the air does, indeed, accelerate beyond the rotational speed as dictated by these geometric factors and you will often find that keeping the tip speed below about Mach = 0.65-0.70 avoids the onset of shock waves and thus the noise associated with them for most hobby props.

Sound is really just a pressure variation at a point in space that propagates to your ear. As a prop is turning through the air, it causes a perturbation in pressure that will ultimately be perceived as a sound. And this sound has a frequency that relates to the number of times a blade passes by that relative point per revolution.

By keeping your blade tips below some critical Mach number, you will certainly reduce or eliminate compressibility noise. Then the other noise sources become dominant, albeit less intense.

Courtesy of Vess Propellers - Chart provided by Mark McQuaide

Figure 1. Propeller Tip Mach Numbers (@ 75 degree F, ambient temperature)



Plane of the Month

Guest Wayne Ungar's 50% Laser

15 Minutes of Fame

Peter & Dave Malchione at Warbirds Over Delaware, 2009

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District IV Volunteers

THE CATAWBA VALLEY Radio Controllers (CVRC) held the first Fly-In for Hospice on May 10, 2009. Enthusiasts from across the area attended the event at Allen's Field in Conover, North Carolina.

The club members donated the proceeds from the fly-in and raffled off a flat-screen television, raising $830 for Hospice.

Mrs. Greg Draughan of Hospice accepted the check from the Catawba Valley club president, Mark McClellan and other members of the CVRC.

For more information about the CVRC, visit the Web site at www.cvrcflyers.com.

Warbirds over Delaware: For the 18th year, the Delaware R/C Club has presented the Warbirds over Delaware fly-in at the club field in Lums Pond State Park, Kirkwood, Delaware. With all that practice, it has become a smooth-running event and has gained popularity with spectators as well as the increasing number of pilots that make the annual pilgrimage the week after July fourth.

This year we were happy to host President Dave Mathewson, District IV Vice President Bliss Teague, Executive Director Jim Cherry, and Technical Director Greg Hahn from the AMA. The opportunity for the Giant Scale modelers to interact with the AMA executives gave them a better feel for where the organization is headed in this area.

Jim Cherry, IMAA's District IV Director Josh Bunn, Pete Malchione, Dave Malchione, John Kirchstein, and Bliss Teague at the IMAA banner.

John Kirchstein, Bliss Teague, Dave Malchione, and Pete Malchione with the Award of Merit.

Bliss presented the Delaware R/C Club with an Award of Merit for our promotion of the hobby/sport in the community.

There were 204 registered pilots flying airplanes that meet the IMAA (International Miniature Aircraft Association) size limits and representing military aircraft of all eras. Perennial favorites Carl Bachhuber and Paul LeTourneau came from Wisconsin with Carl's 1/10-scale B-36 Peacemaker and Paul's big B-25—crowd pleasers, both.

Paul LeTourneau's B-25 lays a few eggs.

Carl Bachhuber with his monster B-36 above; the B-36 in flight below.

Paul LeTourneau and his B-25 Panchito.

A half dozen Minnesotans drove 24 hours straight to see what all the fuss is about. After only four hours they were making plans for next year's event.

The event has drawn spectators from the local area to the extent that we have resorted to off-site parking and we supply buses to bring the public to the field on Saturday. At least 1,500 cars were parked at the campground facility that day.

Following a tradition started last year, 33 World War I aircraft were flown simultaneously in the noon show on Friday. The sight and sound was spectacular!

Each year the club donates a portion of the proceeds to charity. This year we were able to give $3,000 to the Leukemia and Lymphoma Society and to Alex's Lemonade Stand. We hope to continue to increase these donations each year.

Our thanks go to all the participants and especially to the hard-working volunteers who make this the best warbird show in the country.

Glitch Busters
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www.delawarerc.org

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Set Your Course for Upcoming Events	
WRAM Show	February 19 - 21
30th Annual Lebanon Flea Market	March 13
SKSS Wednesday Night Fun Fly	March 24
Tri-County R/C Swap Meet	March 27 @ Hamburg, PA
Toledo Show	April 9 - 11
Joe Nall	May 8 - 15
Lums Pond IMAC Challenge	June 5 - 6
SKSS ESL Thermal Duration	June 12 - 13
SKSS Electric Warbird Fun Fly	July 3
Warbirds Over Delaware	July 7 - 10 (Wed. through Sat.)