R/C REPORT

March 2010
Issue 284

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March 2010 Index

Can you believe the weather so far this year? How are we supposed to get all the reviews completed for those strange models that cannot be flown indoors!! Where is that global warming that Mr. Gore promised us? Next month we will have more product reviews and test reports for you.

The BIG Picture

by Dick Pettit

It's almost springtime here, even though there is 6 inches of snow on the ground. I have already gone out to several of the local club fields to meet the members and see what has been going on over the winter. I just competed the busiest weekend of the year: making preparations for our club's 21st annual Swap Shop. From Friday afternoon setting out road signs to late Friday evening working with buyers and sellers to locate where their tables are located to early Saturday morning opening the doors to allow the multitudes inside to mid-afternoon when everything winds down and all I have to do is collect up the signs. I was quite busy, but it was all worth it to the club. I just may do this another 21 years!

This month, I will show you a nice WWI biplane built over the winter by a friend, and I'll start passing out some of the secret information I have collected about what to do when a new ARF kit arrives on your doorstep.

WWI PROJECT COMPLETION

One of the folks I had met up at a recent Toledo Expo is Randy Hatton from Miamisburg, Ohio. He had sent me photos of his building projects in the past, and I received some photos of his latest project, a Balsa USA 1/4 scale S.E.5a, seen in PHOTO 1. Randy started sending small photos of parts and pieces of the plane as he was building it, but I decided to use only the ones of the finished product.

Randy starts out by saying that "…the plane was to me a very nice build…the most complex plane I had built before was a Sig 4 star 120…." As construction progressed, Randy commented that "…the tail surfaces were nice and easy…", but then added that "… the wings kept getting larger and larger…then I found out there were four of them..." Yep, biplanes have more wings than a Four Star, Randy!! Randy must have learned a lot about building WWI airplanes because he said that he "…enjoyed the build so well I have ordered the 1/4 scale Nieuport 28 C-1…" and it "…will give me something to build the rest of the winter…"

Photo 1: Balsa USA ¼ scale SE-5a by Randy Hatton, Miamisburg, OH

Photo 2: Rear quarter view of Randy's SE-5a

Randy's SE-5a, Photo 2, has an 80 inch wingspan on both wings and the fuselage is 67 inches long. It powered by a Zenoah G-38 turning an 18-8 prop and he uses Hitec 645 servos on all control surfaces with a Hitec 425 for throttle. The plane is covered with Solartex Olive drab for top surfaces and Antique on the bottom.

Okay, Randy. Get out and fly this beautiful plane and let's all see the photos. Maybe even some video, okay?

WHERE DO I BEGIN…?

I'm sure that a number of our readers have assembled their fair share of Almost Ready To Fly models over the years and I'd venture a guess that each of them has their own methodology as to what they do first when the kit box arrives. It may be the time to relate to our readers what I do in preparation for assembling a new ARF and then go on to explain some of the ways I have found to proceed with the assembly process.

My procedure may vary from yours, but I usually start out by looking for a copy of the assembly manual online, usually from the manufacturer's website. I print it out (PHOTO 3) and start looking at the assembly process in general and also determine what I will need to order in the way of hardware, accessories and servos for the project.

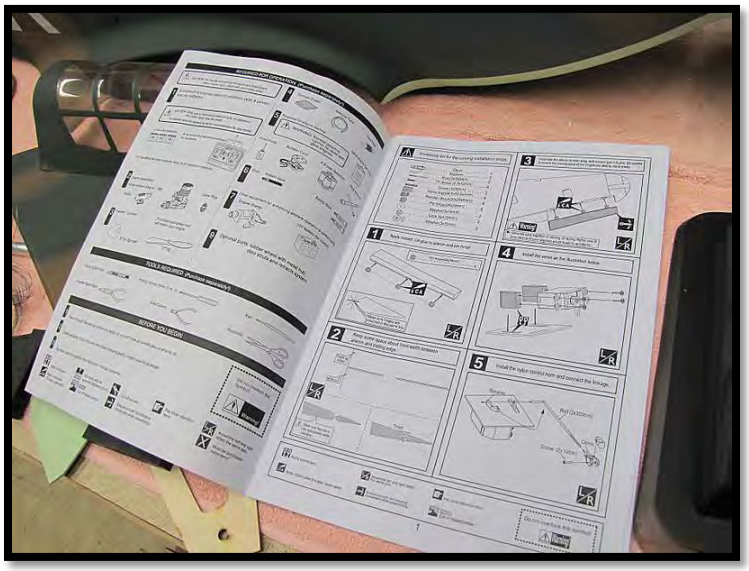


Photo 3: The manual as provided

If the model comes with a fuel tank, it is usually set up for a glow fuel system, and I will usually order a complete new fuel tank with a gasoline

compatible stopper since just about all of my project planes use gasoline fueled engines.

Have any of you noticed that the pushrod material supplied in ARF kits is extremely hard and brittle? Quite a few of the ARF kits I have seen use metric hardware, which is usually okay for use in smaller models; but I will order standard wire rods, clevises and other hardware since they usually need replacing anyway.

I'll take a look and see if a spinner is needed, and if so, I will order the correct size from one of the major spinner manufacturers. If no spinner is required, a simple spinner nut or prop hub will usually suffice to make the front of the completed model look a lot better. Be sure to order a spinner or hub adapter to fit your engine, and have the spinner cut to fit your particular choice of propellers, too.

Engine choices are always a matter of debate, so I will leave the ultimate decision to you: the person who will be building the plane. Let me add to this by saying that I usually follow the recommended engine sizes listed in the documentation or on the kit box, and rarely do I exceed the manufacturer's recommendation. Larger engines will usually take up more space inside the cowl. They require larger propellers which may not clear the ground and they use a lot more fuel; requiring a larger fuel tank.

This brings up another debatable subject; the modifications and changes to a pretty much well designed ARF project. I have heard modelers who have added bracing to this, more glue to that and re-engineered the entire framework just because "…it just didn't seem strong enough to them…" These are probably the same modelers that complain to manufacturers and to other modelers that their plane weighed 5 pounds more than advertised. If something appears to be structurally unsound to me; I will add some bracing or adhesive for safety's sake, but not so much as to add a considerable amount of excess weight to the completed plane. Heavy airplanes only make deeper holes in the ground.

Servos and radio equipment will need to be selected and ordered, and again I will follow

Photo 4: Vexa Servo-X-Citer used to test servos.

the recommended sizes and types if they are listed in the manual or maybe on the manufacturer's website. If not, I will use my judgment and order servos that are both reasonably priced and strong enough for the intended use. I rarely use old servos on a new project, and I usually use products from any of the major radio manufacturers. I select digital servos only when absolutely necessary since I would probably never notice any performance difference between digitals and standard servos anyway. If you want to use digitals, it's your nickel.

When the servos arrive, I always take them out of the box and check them with my servo tester made by Vexa Control. (http://www.vexacontrol.com/) The Servo-X-Citer, seen in PHOTO 4, proves that each and every servo works and no funny noises are heard. Then and only then do I install the rubber grommets and metal eyelets so the servo will be ready to use when needed.

Speaking of servos, most ARFs need servo extension cords to connect the receiver to the servos through the wings or fuselage. Some even have several such extensions shown, which in my mind, is a very bad idea. Every time you add a connector to a servo lead, you add at least three new places for a problem to occur. I always keep the number of connectors to a minimum, usually only at the wing to fuselage joint. I make my own extension cables from Teflon insulated 20 or 22 gauge stranded wire that I cut to length, twist with a cordless drill and solder to each servo using lap joints and heat shrink tubing, as seen on PHOTO 5. I also use locking connectors with gold plated contacts wherever a connection is needed.

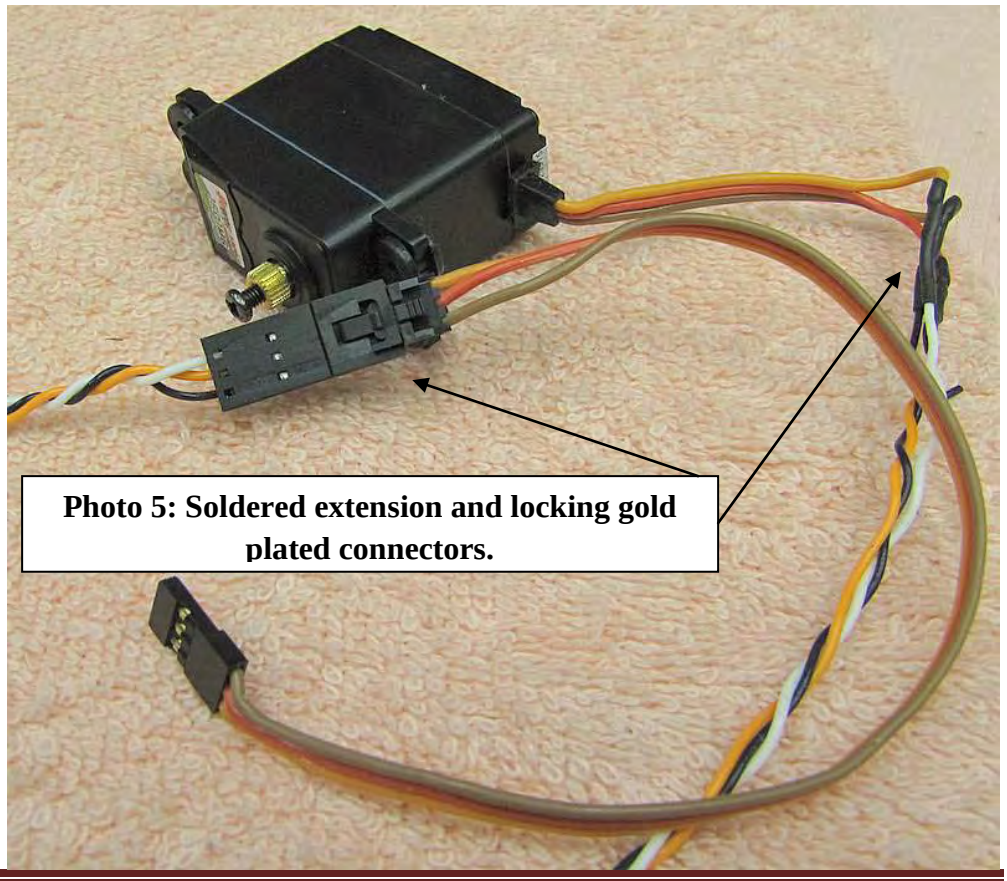


Photo 5: Soldered extension and locking gold plated connectors.

Receiver batteries are a necessary evil and there are as many choices as opinions, and well, you know what else. Recently, I have been using some of the new A123 type batteries with excellent results, but those of you that are using NiCD or NiMH batteries for sport planes should not trade horses in mid-stream. You still have your battery chargers and other battery management tools that will serve the purpose well, and there's probably no really good reason to try anything new. However, for larger models, I use a pair of receiver batteries, shown in PHOTO 6, each connected to its own charge switch which is plugged into my receiver. You will also need a separate battery for the electronic ignition module if your engine uses one. Be absolutely sure to use the correct voltage battery on these ignition systems because higher voltage will NOT provide a stronger spark, only a higher repair bill.

Let me say a few words about the use of voltage regulators and model airplanes. The only time I use a regulator is when I need one to reduce the voltage from my A123 battery for use on an electronic ignition box, and I will assemble that regulator myself. That's the bottom line on this subject and you, as the ultimate user of the completed project, can make the decision to use or not use regulators as you see fit.

Another important group of items you will need to consider are the tools and adhesives necessary to assemble and join together all the parts in the kit box. Here's what my tool rack looks like before I start assembling a new model. PHOTO 7 shows all the tools in place and I try to put everything back in place after a building session. You may need a special size drill bit, or some type of adhesive you may not have on hand. I usually keep a pretty good stock of adhesives in the shop including slow and fast setting Pacer epoxy products along with their ZAP adhesives and Hinge Glue and Canopy Glue. Every so often a dab of hot melt glue or some silicone sealant comes in handy, too. A few feet of double-sided hook and loop can be used to hold radio batteries and receivers in place.

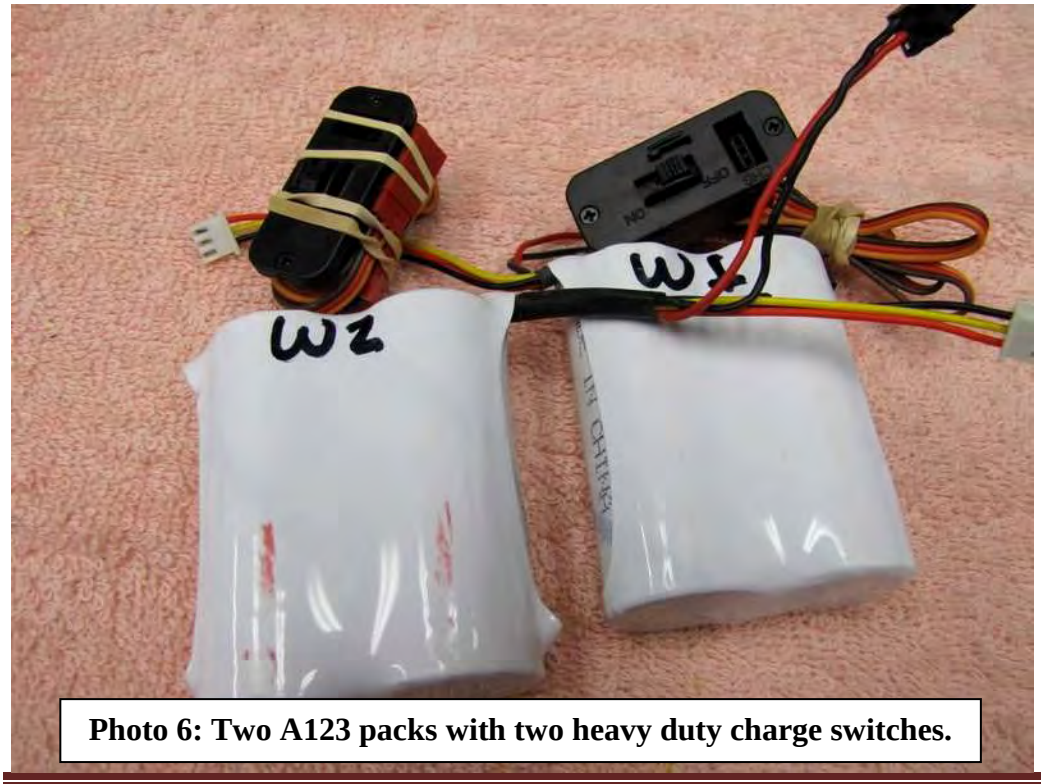


Photo 6: Two A123 packs with two heavy duty charge switches.

Basic modeling tools I will plan on using include a cordless drill with a number of sharp bits, several hobby saws, a few hobby knives with new blades and a good supply of single edge razor blades. Remember that dull tools will cut you easier than sharp blades will.

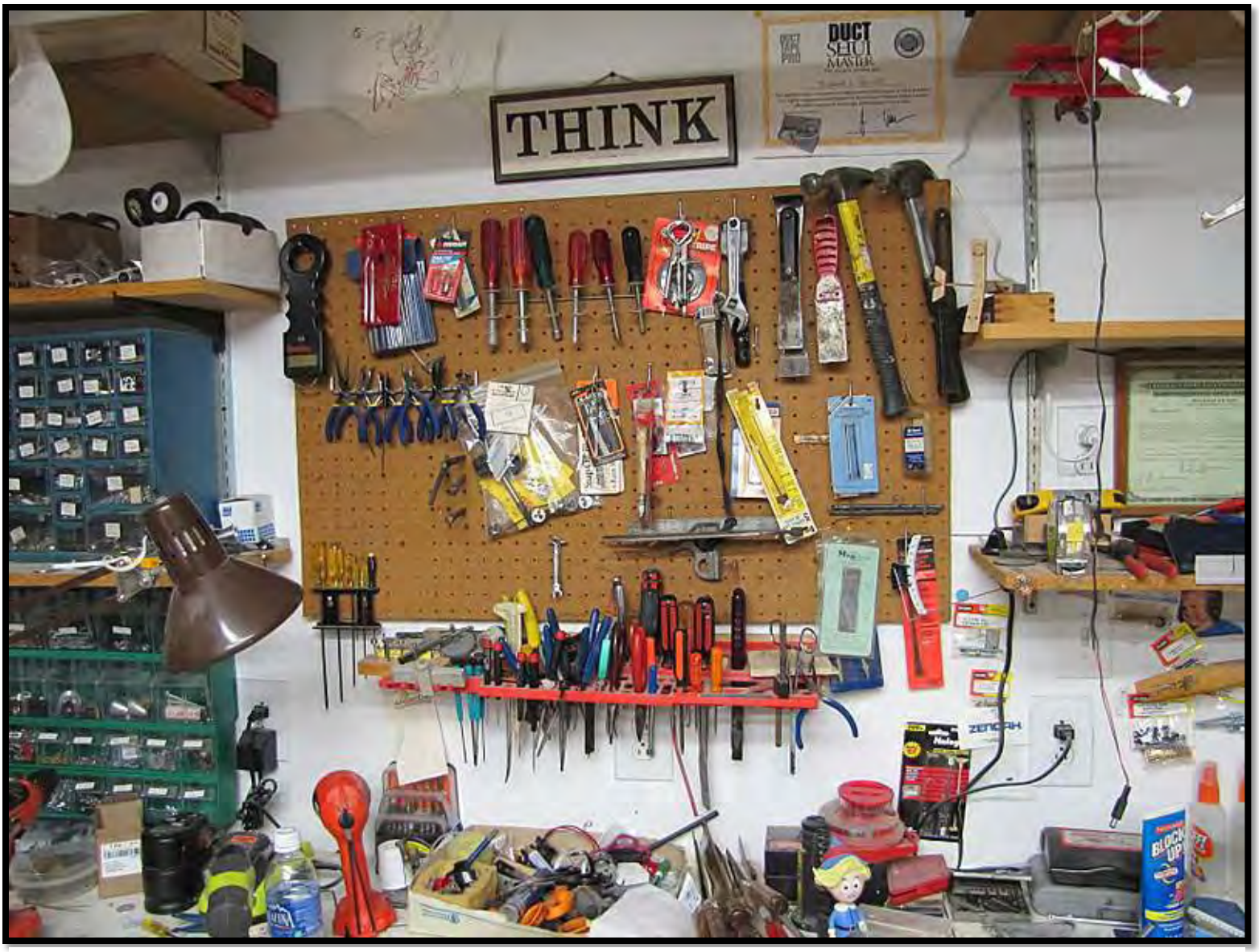


Photo 7: My tool board with all the tools where I can find them

My work surface in my shop is a solid wood door panel 24" by 80" (Photo 8) and I cover it with two layers of suspended ceiling tile. If I am building a true kit airplane, pins will stick in the tile quite nicely. However when assembling an ARF, I use old towels to cover the surface to prevent scratching the finish on the planes parts. You can visit your local "dollar store" and get decent towels for practically nothing and they can be washed repeatedly when they get a little too dirty to use again. Just tell the person who actually washes them that they should not be put back into the linen closet. (*Julia's Note: You RC guys are all the same…thinking that someone else should clean up your mess.! Here's a hint: set the water temperature to cold, turn the dial all the way to the right and pour in the Purex. Once the buzzer sounds, remove the items and either hang out to dry or introduce yourself to Mr G.E. White!*)

Then, one bright and sunny day, the "Airplane Truck" delivers the kit box and it's time to open it up to see what's inside. Photo 9 shows the kit box and I copy down all the

Photo 8: My work bench covered with ceiling tile

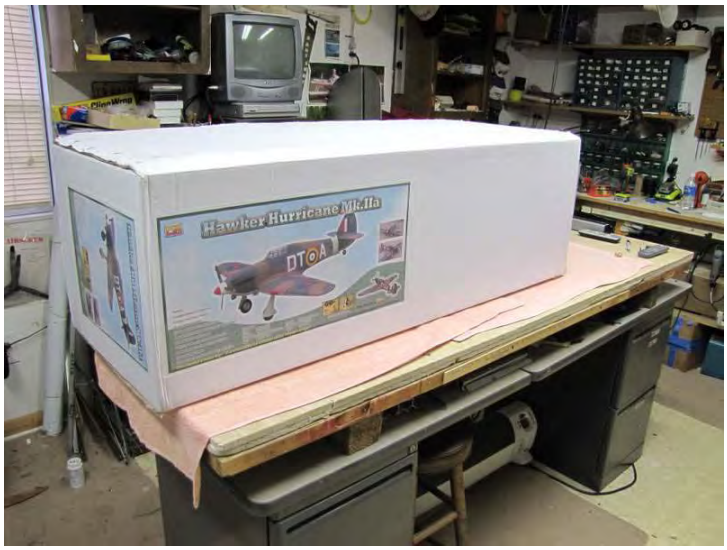


Photo 9: Here's a typical kit box as it comes from the hobby dealer

information on the label like wingspan, suggested weight, etc, to see if it matches up with the information in the manual and online. Inside the box, most kits come with all the big parts packaged in plastic bags and most have the smaller parts in bags also. (PHOTO 10) You may want to save the bags that the wing panels are packaged in because they can be used to protect the wing panels from excess epoxy when gluing them together.

Photo 10: All the parts are in individual plastic bags

I then take everything out of the box, unpack them (PHOTO 11) and check the contents against the inventory list in the manual, if there is an inventory listing. Sometimes I even weigh each part or a bag of smaller parts, add it all up and determine what the anticipated total weight would be once an engine, radio system and other accessories are added.

Photo 11: This is what was inside all those plastic bags

You have read through the assembly manual that came in the kit box, haven't you?

Well, if not, take the time now and read everything front to back, and then go back and read it again. You are looking for things that may be described in the wrong order or using the wrong parts. I have seen assembly steps that tell the builder to glue in a certain part and then fit something under that part; now that you don't have access to that area any more.

Some of the more recent kits have instructions that have been translated from a foreign language into a language that isn't quite recognizable. For instance, the manual I am using right now tells the builder to "…epoxy the gear house to the relevant position.." (*Editors Note: This new language is affectionately called Chinglish! You know, Chinese English!*)Something was lost in the translation and thank goodness there are drawings to show what should be done. Pictures are worth a thousand words, so use them to your advantage.

Speaking of instruction manuals; the quality of such documents range from step-by-step directions that take you through everything needed to get the project completed to something I call "The Denny's Menu", a single folded sheet with drawings with circles and arrows pointing to parts of an airplane that may or may not be the one you are trying to assemble. Yes, they do exist and I wish anyone a lot of luck when trying to figure out what they are trying to say. It may be possible to ask questions online to see if anyone else had any success trying to decipher

the pictures and arrows for that kit and you may get a nice surprise when you get an answer back. Remember, Google is your friend.

I then take a look at some of the dimensions given in the manual and compare them to what is printed on the kit box. Sometimes, because of updates to instruction manuals; the label on the kit box may have different specifications listed, but usually they are quite similar.

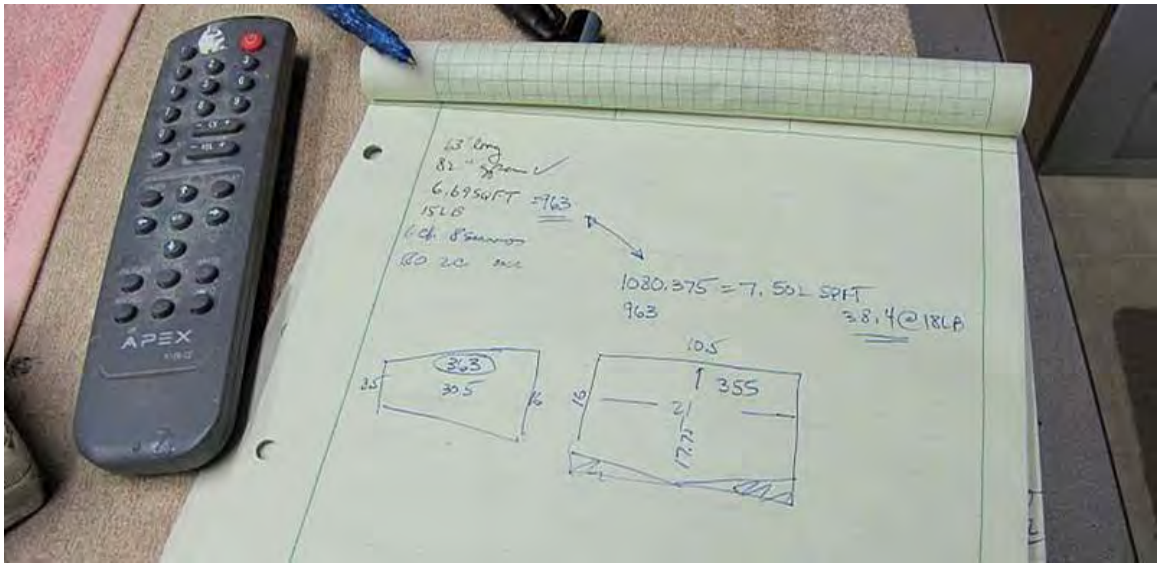


Photo 12: Wing area calculations sometimes do not match

I also try to figure out the correct wing area using the dimensions of the wing panels themselves. I measure the wing panels and subtract the amount around the outside of the wing tips. I do include the portion of the wing that is either under, over or through the fuselage, since the fuselage actually provides at least the amount of lift generated by that portion of the wing. Using my trusty calculator, I found that the wing area on this particular model was more than 100 square inches than the amount stated in the manual, as seen in PHOT☺ 12.

I am not going to try to tell you exactly how to assemble this new ARF you are patiently waiting for, simply because they are all different and each one may have its own idiosyncrasies when it comes to the assembly process. All I can suggest is to read the manual, try to determine what is trying to be told to the builder and then take your time doing each and every step in order; unless it makes no sense to do it that way.

However, in the upcoming months, I will continue this process and show you some of the ways I make use of my modeling time more efficiently when building just about any project.

That's about all I have this month. I'll be traveling to Toledo in April and hopefully will be heading home with at least one or two new projects to work on; quite possibly as product reviews right here on the website. How about this? Send me or Tony an email asking what projects you'd like to see reviewed and that will give us some idea what types of planes or other products you folks are really looking to be reviewed.

Until next time, see y'all at the field…

Dick Pettit

pettit@ti.com

Bird on a Wire

by Terry Dunn

I have to start off this month's column with a confession. As I mentioned last month, I had planned to complete the installation of Parkflyer Plastics' seaplane conversion kit on my Multiplex Twinstar II. Well, that didn't happen. I got sidetracked on another project and the Twinstar didn't progress at all. However, the floating Twinstar will be back on my radar soon and I'll report on it here.

The thing that got me sidetracked from the Twinstar was my blossoming interest in night flying. Ever since I saw several different night flyers at the B.E.S.T. fun-fly last October, I have been itching to build at least one night flyer for myself. I finally took some initiative to get the ball rolling.

A night flyer is really no different from a regular RC plane, except that it has some means of providing illumination and orientation in the night sky. This could be done with something as simple as taped on chemical "glow sticks" or a trusted buddy wielding a powerful flashlight. I've seen both used with good success. However, most folks prefer to use permanent on-board lighting.

Two common forms of lighting are "glow wire" and Light Emitting Diodes (LEDs). Glow wire is flexible, small-diameter tubing that glows a bright neon color when turned on. Power comes from an onboard battery that connects to a controller for the light tubes. A few of these tubes taped on the outside of the wing and fuselage of your plane are usually sufficient for successful

night flying. Several vendors, including Great Planes, offer turn-key glow wire systems for RC models.

LEDs have recently emerged as the most popular lighting method for night flyers. I think that this is because they're cheap, don't use much power, are lightweight, and work very well. You can buy some premade LED systems, but the one's I've seen are pretty expensive. You can also buy "LED strips" that have LEDs mounted to a narrow strip of thin, flexible circuit board

with adhesive backing. You just break off the length of strip that you want, stick it in place on the plane and provide it with power (usually 12 volts). I've seen the LED strips for as little as $10 per meter, but it usually costs much more. Even at the low end of the cost range, you could easily spend $30-$40 lighting up a decent sized park flyer. It is easy, and much cheaper to build an LED lighting system yourself.

There are two basic ways to use LEDs for night flying. One way is to place the lights on the outside of the airplane so that you have visible points of light as you fly. Another method is to place the lights on the inside of a plane with translucent covering or thin foam walls. If done correctly, this technique gives the whole airplane a glowing appearance, which is really neat to see (Photo 1). For my first stab at lighting, I'll be taking the external approach.

Photo 1: Lee Ray's "BEST Special" is a homebrew night-flyer design that illustrates good usage of internal LEDs for lighting.

As I was plundering through my workshop looking for a suitable airframe to host the LEDs, I found a set of wing cores for a Zagi-400 flying wing. The Zagi is a 48" wingspan foamie from Trick RC (http://www.zagi.com) that was very popular a few years back. I've seen these planes fly at weights of anywhere from 16 to 30 ounces. By omitting the fiber tape spars and packing tape covering, I hope to have this Zagi airborne at less than 10 ounces. That should let it fly very slowly, which will help me to maintain orientation.

So what is an LED anyway? Simply put, it is a diode that emits light. A diode can be thought of as the electrical equivalent of a one-way valve. It allows current to flow in one direction, but not the other. LEDs have three characteristics that we are concerned with: forward voltage, maximum operating current, and color. The forward voltage is the minimum voltage required to make the LED allow current flow. Below this voltage the diode is basically an open switch. Above this voltage, the LED allows current to flow and emits light of its specified color. Note that the color is determined by the internal materials in the LED, not the color of the lens. Maximum operating current, is the amperage that will provide the brightest light output from the LED. Operating above that current will cause premature failure.

Shopping for LEDs can be tough because there are thousands to choose from. If you don't know what you're looking for, it can get overwhelming. For RC night flying, narrow your search to 5mm "super bright" types. There are certainly other types that will work well, but these are popular and easy to find. I bought my LEDs on EBay. I found a set of 100 LEDs in four colors (25 each of white, red, green and blue) for about $8 with shipping. I quickly figured out that

25 white LEDs wouldn't last me very long, so I bought a 100 pack of white-only from the same vendor for the same price. The white LEDs also came with resistors. Why resistors? Keep reading.

We already talked about forward voltage and the need to keep tabs on the maximum operating current. As long as you provide an input voltage right at the forward voltage, you don't have to worry. But since we'll be using a battery that loses voltage as it is discharged, we'll have to start out with an input voltage above the forward voltage. As the battery voltage drops, we don't want it to dip below the LED's forward voltage and turn off the lights…a sticky situation in the middle of a night flight. However, providing input voltage higher than the LEDs forward voltage causes the current to increase exponentially. So, we need a way to regulate the circuit. The answer is a "current limiting resistor" (Photo2).

Photo 2: The two white LEDs in this photo were wired in series with a 100-ohm resistor to accommodate an 8.4-volt power source. The lower forward voltage of red LEDs means that three lights and a 100-ohm resistor can be hooked to an 8.4 volt source.

Determining the resistor that you need for each LED is a function of the input voltage, the LED's forward voltage, and the maximum operating current. Subtract the forward voltage from the input voltage and divide by the current:

R = (Input voltage – LED Forward voltage)/ Max operating current

A real-world example using a 5-volt input and an LED with a 3-volt forward voltage and 20-milliamp maximum operating current would look something like this:

R = (5 volts – 3 volts)/ .020 amps

R = 2/.02

R = 100 ohms

Based on that calculation, if you add a 100 ohm resistor (1/4 watt size is fine) in series with each LED, you will not have to worry about cooking the LED with too much current. Remember that your actual voltage will vary as the battery drains, so this calculation doesn't have to be very precise. You just want your resistor value to be in the ballpark. If you don't feel like doing the calculations yourself, there are tons of online calculators that will do it for you. Just do a Google search for "LED Calculator" and you'll get a bunch of tools to choose from.

The calculation above talks about just one light, but obviously we'd like to use many more than that in an airplane. The easiest thing to do, and the path most folks take, is to put all of the LEDs in

parallel, sharing one or more battery. With this set-up, the total current draw of the lighting system is the sum of the current draw of all LED/resistors. The best part is that if any LED should go bad for any reason, all of the other LEDs will continue to operate normally.

LEDs can be placed in series. In this case, your input voltage must be at least equal to the sum of the forward voltages of the LEDs in series. For example, if you want to place two 3-volt LEDs in series, your input voltage must be at least 6-volts to make the LEDs operate. You could use something like an 8.4-volt battery as input. The method to calculate the required resistor is the same as before, you just treat the two LEDs as one LED with a forward voltage of 6-volts. Be aware that if any LED in a series set up fails, current will stop flowing and all of the other LEDs in that series will stop lighting.

For my first night flyer, I decided to do use a combination of series and parallel LEDs. The airplane will use a 2-cell, 8.4-volt LiPo battery for motor power and I wanted to siphon off of that same pack to power the lights. All of my LEDs have a forward voltage of 3-volts, except for the red ones, which are 2.2-volts. Based on that, I made several set of lights. The white, blue and green LEDs were each grouped in pairs with a dedicated resistor for each pair. I also made a set of three red LEDs and a resistor in series.

Remember that LEDs will only flow current in one direction, so it is important to mind the polarity of your connections. On my LEDs, the positive lead was a little longer than the negative lead. I marked the base of the positive lead of each LED with a red marker so that I could identify it after I shortened the leads for soldering. The polarity of the resistor doesn't matter. It also doesn't matter where you place the resistor in each light set. I soldered it to the positive lead of each set just to be consistent. These are all small components, so use a low wattage soldering iron and use a heat sink whenever possible to prevent heat damage. I used a 3☺-watt iron with a small tip.

At this point, I had about a dozen pairs of lights (and a red triplet set) that I needed to attach in parallel to the battery. Because my host airplane is a flying wing, I decided to make one strand of lights for each side of the wing. On the bottom, the inner lights would be white, with red lights on the left tip and green lights on the right (per FAA lighting standards). The top of the wing would have two pairs of blue lights on each side.

You could use just about any light gauge wire to join the lights, but I used 24-gauge magnet wire. Magnet wire is single strand copper wire that has a very thin enamel coating as insulation. The enamel can be easily scraped or sanded off to allow soldering at any point along the wire (Photo 3). Stripping a mid section of standard PVC or silicone jacketed wire can be difficult, so the magnet wire is ideal. In my area of Houston, the price of magnet wire varies quite a bit. The first store I stopped at was selling the

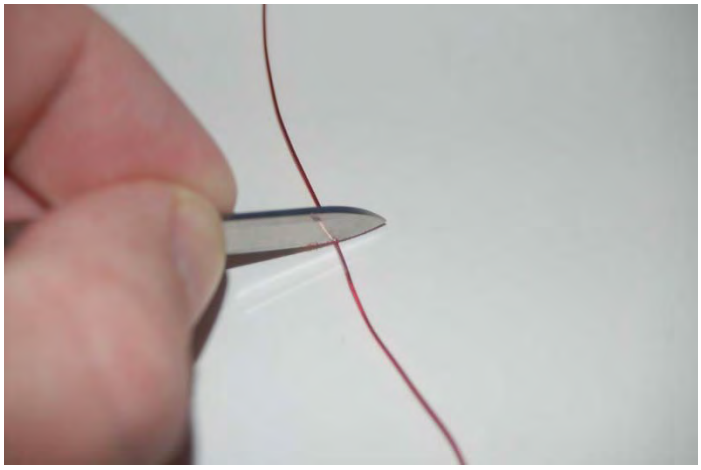
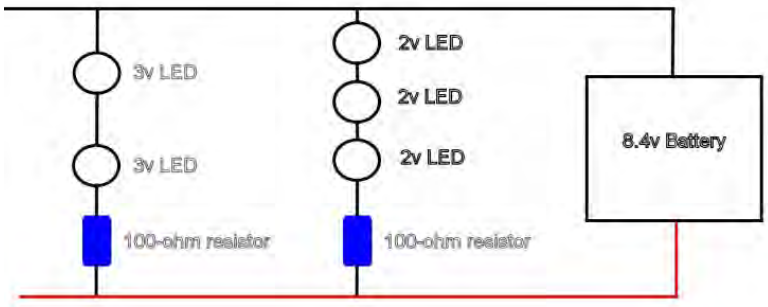


Photo 3: I used a pocket knife to scrape away the enamel insulation on the 24-gauge magnet wire that makes up the main leads of the lighting system.

wire I needed for $18. The next store had what seemed to be the same thing for $3.50. Guess which one I bought. The completed light arrays look like ladders (Diagram 1), with the positive and negative magnet wire leads from the battery being the sides and each LED set being a rung. To install them in the plane, I cut slits for the magnet wire along the length of each wing bottom, which is foam. I cut similar slits to accommodate the LEDs, mounting them so that they protrude just slightly. A few dabs of silicone adhesive hold everything in place. To get power to the lights, I soldered a few inches of standard, silicone-jacketed wire to the ends of the magnet wire and then to the battery connector of the ESC. This way, the ESC and lights share the same



battery connection. I also installed a switch in line with the positive lead so that I could turn off the lights for daytime flight.

In all, I have 25 LEDs. When you switch them on, the Zagi could light up a room (photo 4). The total current that the lights consume doesn't even register on my wattmeter. So I don't have to worry about the lights having a noticeable impact on flight times. The Zagi is almost complete and ready for flight testing. I'm excited to see how it works out.

I'm planning to use next month's column to get caught up on my lingering projects. I'll report on the Twinstar seaplane conversion and the Zagi night flyer. See y'all then.

Terry Dunn

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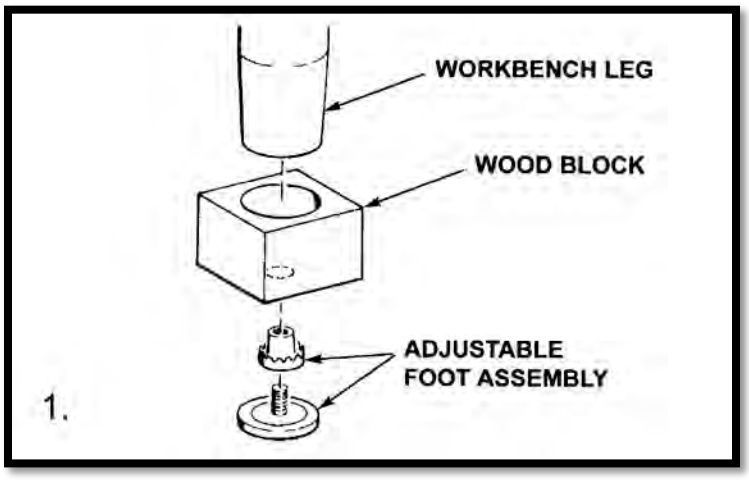
Here's How....

by Walt Wilson

Share your best ideas and building tips with others. Send your "Here's How…" ideas to… Walt Wilson, 3000 Persimmon Drive, St. Charles, MO 63301, or e-mail them to rallyo@charter.net. Please be sure to include your full name and email address. The first submitter of an idea used here will receive a free one-year subscription or renewal to R/C Report Online. If the subscription is to be a gift to someone else, please state this when submitting the idea.

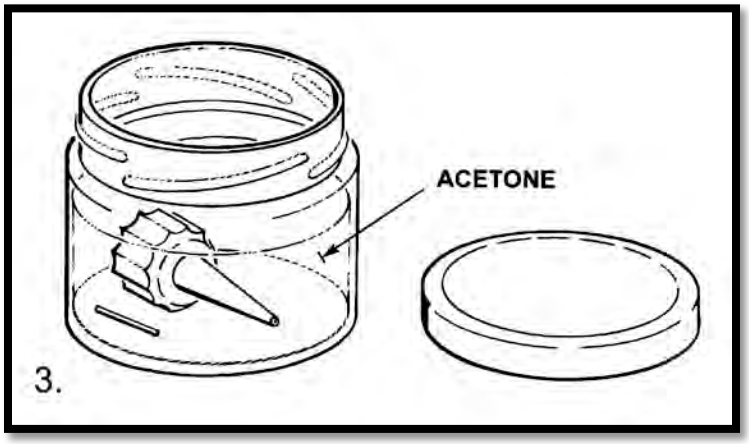
Cox Warbirds are available again at: http://www.gravityhobby.com/home.php?cat=263. They fly well with the brushed motor that comes with them, but really come alive with a brushless motor and LiPo battery. The P-47 Thunderbolt I'm holding has all the goodies and really hauls! It will do any maneuvers one may expect from a plane with only rudder, elevator, and throttle controls. Some members of our club have installed aileron controls, too. It can be a fun little airplane.



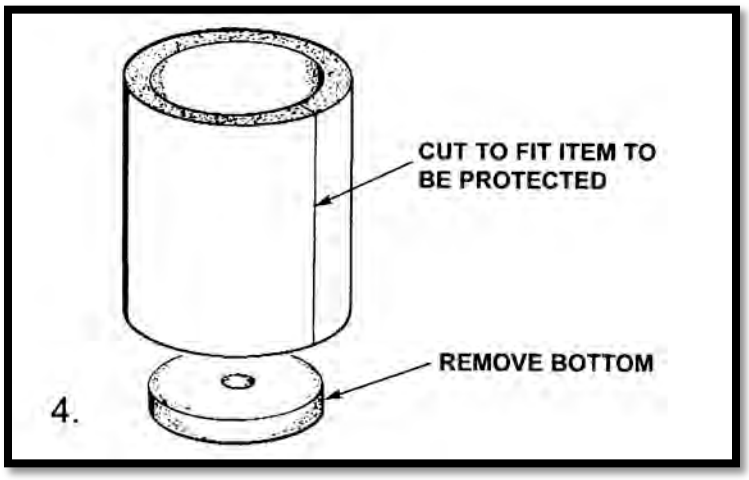
1. Level Tables: From Don Lewis, of Hendersonville, TN. (Hi, Don! Give Gracie Lou a hug from me and Isabelle! Julia) Don's building tables are made from solid core doors with banquet table legs (purchased from Lowe's). As you know, floors are frequently uneven and can result in a building table that isn't level or one that may rock (and they usually do that at the most inopportune moment). By utilizing a small block of wood (oak is recommended) approximately twice the size of the table leg, you can easily make a leveling foot. Using a Forstner bit, the size of the outside diameter of the leg, drill a hole in the center of the wood block. Drill a hole in the center of that hole for a T-nut to fit the threads of an adjustable foot (again, available at most local hardware stores). Insert the T-nut, screw in the foot, and fit the block to the table leg. Make one for each leg, of course, and you can adjust your table so it is level and does not rock.

2. Straight Building Surface: (No illustration) From Ron Fiedler, of Prescott Valley, AZ. It has been recommended that you should not only have

a flat building table, but to use ceiling tiles as a building surface so pins can be pushed through it to hold parts in place. Ron wasn't satisfied with that. He put a piece of 1/2" sheet rock (wall board) on his workbench. This is good stuff for a building surface. It holds pins securely so the parts are solidly attached to the board. The wallboard takes the shape of the surface under it and can be shimmed (Ron uses newspaper) to correct for irregularities in the top of the workbench, if necessary. It is heavy enough to not deform or lift due to stress of a warped piece of wood pinned to it. It is 8 feet long, it doesn't make him itch, and best of all it is cheap. One piece lasts through many, many projects. Try it, you'll like it.



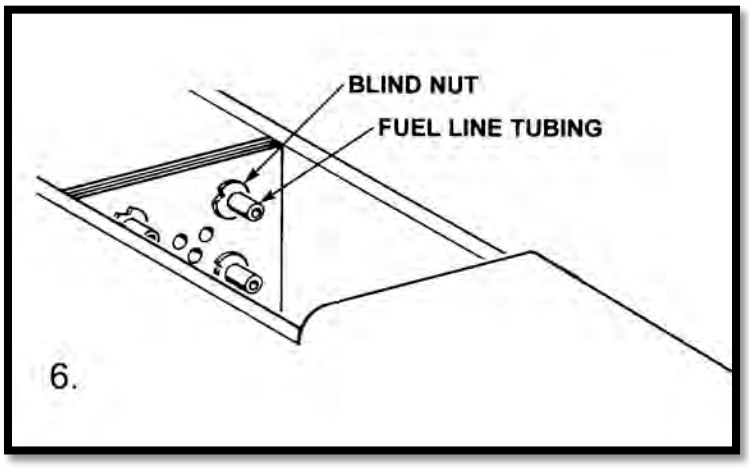
3. Clean CA Tips: From Stan Cotrill, of Melbourne, FL. CA bottles come with tips on which you can place a finer tip. The finer tips sometimes clog up after several applications. They can be cleaned up quite simply, and thoroughly, without using T-pins or the like. Simply soak them in acetone. You can use any kind of glass bottle that seals when the lid is screwed on tightly. Fill the bottle up about half way with acetone. Put your clogged up tips in, close the lid tightly, and shake the bottle to insure that you have eliminated any air bubbles inside the tips. Stan keeps three or four tips permanently in the bottle so that when one clogs, he can put it in the bottle and fetch a clean tip. After fetching the clean tip, hold the ends on a paper towel to eliminate any residual acetone. Caution: Avoid exposure of bare skin to acetone.



4. Cheap Foam Padding: From Scott Rhoades, of Gaines, MI. Good padding material for batteries, receivers and fuel tanks can be made from soda can and cup insulators that are made of soft foam. Best of all it will keep your drink cold or hot until you're ready to install the battery and receiver in your plane. Remove the bottom, which is usually glued in place, and cut the foam to size. This material works well with CA, making it easy to fit to various shaped objects.

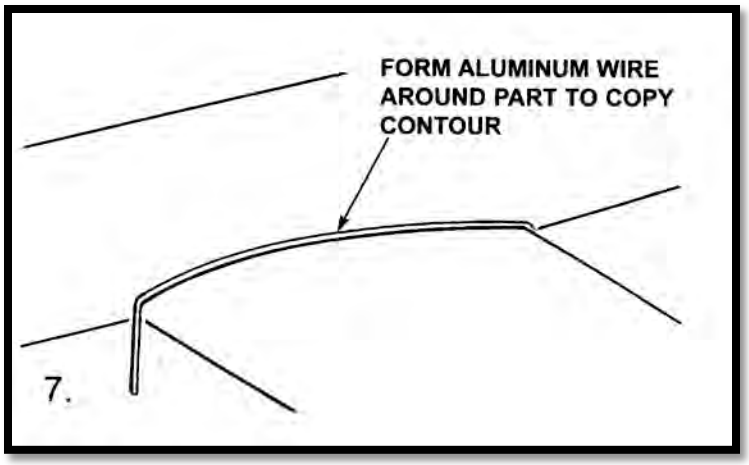
5. Warm Batteries: (No illustration) From Don Fitch, of St. Charles, MO. Cold temperatures can severely reduce the power of the batteries we use in our planes and transmitters. One way to keep them warm in cold weather is to attach the warming pack found in chemical hand warmers or foot warmers. One brand is 'Foot Warm-Up' foot warmers by HeatMax, available in most stores that sell sporting goods. Open the package; shake the packet of chemicals inside, and in a few minutes they get warm and stay

warm for up to 10 hours, long enough for a full day's flying with no temperature-compromised battery capacity. CAUTION: Be careful to prevent overheating of the batteries, which could be caused by placing them in a confined space with the warmers. Some batteries could be damaged by too much heat! Also, put one in your pocket to warm your hands between flights. Walt's note: They can also be used to keep the cylinder, on a glow or gas engine warm, to aid starting in extremely cold weather.



6. Protect Mounting Screws: From Mark Klein, New Hyde Park, NY. Use fuel tubing to cover ends of screws in the fuel tank compartment. It protects the threads when epoxying blind nuts in place, keeps the screw ends from puncturing the fuel tank, and helps retain the screws if they come loose. Mark also uses tubing over the end tips of axles to keep from losing the wheel collars if they come loose.

7. Uses For Aluminum Wire: From Dick Sprau, of Helena, MT. (Hugs to Baby, too! She is our Pet of the Month for March! Julia) Go to Home Depot, Lowes, etc. and pick up a couple of feet of aluminum wire used to run underground power to houses. Strip and unravel the wires. If



straightening is required, place one end of the metal into a vise and pull on the other end with pliers. Now you have a straight piece of soft wire that can be molded around parts to make copies of various curves. Also, short pieces of wire can be bent into all kinds of hooks, and with rubber bands, hold things together until the glue dries. It's handy stuff to have in a shop. It can also be used for making hooks to hang parts being painted. When you're all done, you can recycle the wire.

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Two OLD Scale Guys

by Bill Hurt &Dick Watz

Greetings from Geezer Gulch, once again!

Dick: Well, Bill, it looks as if you have been enjoying some of our lovely Michigan weather down in the Sunshine State for the past few days. I hope that your citrus crops and trees have not suffered too much in the way of damage with the unusual cold weather.

Bill: Well, Dick, we had temps well below freezing for several (more than 5) nights in a row, so it will be some time before we know exactly how much damage that we have suffered. It looks as though we may have lost up to 20% of the citrus, and it kind of looks as if the strawberry crops are done for. This means that your morning glass of O.J. will probably cost you about a buck more per quart. Your strawberry preserves will be through the roof as well. What most people don't realize is that Florida provides about 80% of the Nation's citrus fruit and about 40% of the rest of the world's citrus fruit as well. Losing 20% of the crop will put a real dent in the available citrus items.

The cold spell did give me a little time to work in the shop, and get things organized and arranged to suit me a little better. It's always tough when moving into a new shop, since the things that I used to be able to reach for and touch are no longer exactly where they once were.

Dick: Well, I always try to have several sizes and grades of balsa, plywood and bass wood available, as well as a fresh supply of the different glues that I use on hand. I clean the shop and my tools, and I make sure that all my sanding tools have fresh paper installed. My knives have fresh blades in them, and my straight edges are clean and nick free. I clean and sand my work benches to rid them of any glue that was left on the surfaces. I make sure that the shop is thoroughly cleaned, and the other projects put away. Finally I make sure that there is plenty of cold…whatever…in the refrigerator.

Bill: That's good advice Dick. Most guys do clean their shop before beginning a new project, but I've known a few who tended to blend some models by using parts from one model on another.

I built a new building table and used 4X4 lumber for the 6 legs. I drilled the ends of all 6 legs deeply (at least 3") and embedded some threaded inserts using epoxy. These inserts are actually cinch anchors that are normally used to locate equipment in concrete floors. After the frame of the work table was assembled, I installed bolts that were fully threaded, into the inserts; thus enabling me to completely level the table in all directions. I used two levels, and a wrench, and turned the bolts in or out until the table was level.

For the top, I decided to use a couple of new doors that I bought (Conned the guy out of at a deep discount, too!) at one of the local big box stores. I used a hole saw and at the end of each of the doors cut an access hole. I found a couple

of plastic inserts that are used to pass wires through a desk top for computer wiring, and installed them in these holes. I used these ports to pass the power cords for my lights and power strips through. Yes, I'm getting older, so I do use these articulated lights (mercury vapor) that you can move. One of them also has a large magnifying lens as well. I don't know about any of you, but I don't work well in shadows. While I was at the big box store, I managed to buy a few pieces of ceiling tile to fix to the new table tops.

Having a shop that is at least 4 times bigger than the old one allowed me to spread my power tools out a little more, and gives me a less crowded area in which to work. I had to purchase some more PVC pipe and fittings to allow me to hook up my central vacuum system to all the tools. Now I can just open the slide to the appropriate tool, and the Shop Vac gets to do the work. I keep a 3" camel hair brush that has never been used for anything but dusting, and a careful swipe or two keeps the tools and the tool area clean.

The bonus is that I no longer have to reach around the drill press to use the band saw.

I also was able to find a large drafting table at a local construction company that fell on hard times and was forced to liquidate most of its equipment. This will enable me to more easily do my drawing of detail parts, rather than the old way of cutting wood and fitting it until I had the part shaped to fit.

I have gotten a few emails this month, and the first one asked how we went about cutting the fuselage formers for a glider that the writer had the plans for, but the plan did not include the fuselage formers. I answered him with a question. The question was, "Does the plan show a front view of the fuselage in addition to the side and top view?" The gentleman answered that yes, indeed the front, side and top views were included. This got easy very, very quickly. The cure for not having any formers was pretty straightforward in this case. I had him to trace the largest diameter on the front view. This first tracing was to become the former for the fattest part of the fuselage. The plan showed the stringer and crutch placement, and I had him to cut the notches and the slots for the stringers and crutch. Then I told him to measure the height and width of the first former, and to write them down. Then I had him to measure the plan for the height of the next largest former and do the, "Gozentas." This would give him the percentage of size of that former, and so, on until he had all the formers cut. Once they are all cut, then it becomes easy to mark the crutch at the former locations. Then by laying out the stringers, you can mark and cut the notches for the stringers on the entire fuselage.

Next, I heard from our old friend, Lonnie Johnson. Lonnie is in the process of finishing his third scale Waco. I'll bet you wondered why there was no mention of one of them, didn't you? Lonnie is in the process of covering his big YMF-5, and is doing a great job. He is even doing all the reinforcing tapes on the stringers, and it's coming along very nicely. He has made his tail group fairing from fiberglass, and I think that you will like what he has done.

Photo 1: Lonnie Johnson's third scale fuselage showing the reinforcing tapes over the stringers.

Photo 2: Lonnie Johnson's third scale fuselage showing the fiberglass fairings.

Dick: Wow! That's really great work there Lonnie. I think you are going to have a winner on your hands!

I received an email regarding your use of the phrase, "Center of Balance." The writer was amazed as to how that wording made more sense than the use of the term Center of Gravity, or just C/G. I think that it's just that we get so used to a certain term that even when it makes no sense; we still continue to use it. I like the term, "Center of Balance." It is a reference to the airplane, rather than what we are standing on. It keeps things in their proper perspective.

Bill: I had a phone call from our friend, Dan Hudson (from last month's photos of the beautiful Waco) and he had been having a problem with the throttle linkage, and not being able to get the throttle travel to coincide with the stick movement. Dan was still using the metal disc that came already mounted on the Walbro carburetor on his Zenoah G-26 engine. I told him how to remove the disc from his throttle shaft and how to use a nose wheel steering arm to soften the movement of the servo. He was able to perform this operation

with no

Photo 3: Lonnie Johnson's third scale Waco fairings.

problem, but then his engine would not run after it burned up the prime. Another phone conversation pretty much had me convinced that he had gotten some cuttings into the fuel port on the carburetor, and that he would need to clean it. I had already asked if the throttle butterfly was backward (that is easier to do than you can believe) and he did not think that this was the case. As it turns out, this was all that was wrong with the engine, and it runs well once again.

Dick: I still get a lot of questions regarding kits. Most want to know if the manufacturers will ever release the kits again. I wish I felt better about this, but I honestly don't think that we will ever see the proliferation of kits that we once enjoyed. A lot (read: most) of the kit producers have been bought out by a couple of the major distributors, and the models that lent themselves easily to conversion to ARF's have been done, and the dies and plans are gone for good. This is not a slam against the ARF models, but is what is and has happened to a lot of the kits that we all knew and loved. It is just a matter of economics, and the distributors will only produce what sells and sells in large numbers. It appears that if you want to build one yourself, you will need to get a copy of the building plans, and cut your own, or get a commercial kit cutter to cut one for you. Bill, what's your take on this?

Bill: Dick, I totally agree. Once the kits that were available became second choices to the ARF of the same, or close to the same plane, the kits were gone. It was just a matter of time before the big boys in the hobby were in total control of what was offered, and they can't afford to warehouse a few kits for the few who seem to want them. You can't find fault with the business decisions, even though a great part of our hobby lives are gone for good. Thankfully, there are still some good plans available, with the templates, so building is not going to die. We still have the ability to pretty much build whatever it is that we want.

Here's an even better idea. Why not try drawing your own kit? It's not really all that difficult. Dick and I have been at it for a long time. Just sketch out what you think will fly well, and then transfer the sketch to a large piece of paper. You can make friends with the guy who cuts meat at the local grocery store, and buy some of his butcher paper. It makes great plan paper. You can download working airfoil designs from the internet, and incorporate them into your design. I'd recommend keeping the first few simple, and before long, you will be able to draw pretty much anything that you like. Scale? No problem. The Smithsonian has plans for full scale airplanes, and you can transfer the shape

and dimension of whatever you like in the scale that suits you best.

Does it take a little longer? Sure it does, but this is a hobby. Nowhere does it say that you have to finish a model this week. Give it a try. I promise that you will be happier to take your finished work to the field and be able to say that it's my design. I drew it, cut it and built it. Be prepared for the newbie question that is sure to come next…, "Where can I buy that plane?"

Is it an ARF? Who makes it? What will you take for it? Etc. Etc. Etc.

I just received an email from Frank Tiano. The entries for Top Gun 2010 are closed. The event is full. The entry list reads like a Who's Who in the Scale model world. There are entrants from all over the world, and from each hemisphere. It looks as if there are going to be a lot of new models there this year that have never been seen before. This will once again be the most exciting five days for Scale Modelers that you can imagine. I can't wait for the Static Judging for Team Scale on Friday. This is a very exciting time for me, what with seeing most of my friends in the Scale community, and being allowed to Judge (Scale outline) their best efforts. It truly is a humbling experience. Hopefully everyone will be able to take their models home in just as many pieces as they brought them in.

Dick: I'll be there this year as well. It's high time that you and I finally get to meet face to face, rather than having this long distance friendship that we have developed over the past few years. That's right folks. Bill and I have never met each other before. We started out emailing each other, and one thing led to another. Now we talk pretty much every evening on the phone, but never face to face. It's an unusual arrangement, but it has worked out very well with us. We both grew up with the hobby, and at about the same time, and our likes are, obviously, pretty much the same. We tend to like the same kind of models (Well, I'm a little more fond of the War birds than Bill.), but I'm trying my best to convert him.

Bill: Well, Dick, you have given it your best shot. I'm not anti War bird, but my favorite models come from the Golden Age of flight. Most of them have two wings, and round engines.

Mitch Epstein has his big Waco up and ready once again, complete with a new set of wheel pant spats (from Lonnie Johnson), and I'll have to say that it's looking really nice.

Photo 4: Mitch Epstein's New Landing Gear spats.

Dick, I just received another email asking about how I do my shear webbing when I'm

framing my wings up. This is an often asked question, but it's an important one.

I normally build my wings using multiple spars (one upper front, one upper rear, one lower front and one lower rear). I have a small hobby table saw, and I set the fence for the saw up so that the kerf (or the blade) will be right in the center of the spar material. I adjust the blade so that the kerf will be dead in the center of the material. I adjust the blade height so that I only remove about 1/8" of material. I run all the pieces of spar material through the saw. When I get the bottom spars in position, and the ribs positioned, I cut my shear webs to size. I try to get the height of the shear webs exact, and the width must be exact as well. The grain of the shear webs must be vertical in orientation. I use aliphatic resin (Titebond II) as my glue of choice, and thin it somewhat with water. I use a small paintbrush to apply the glue to all the parts for this assembly. I place a rib, and then set the shear web into the slot in the bottom spar. I then place the next rib, and make sure that the glue is applied to the ribs, the spar and the shear web. I then glue the rib and the shear web to the rear spar at this time. Once I have the ribs, the shear webs and the spars glued, I will add the upper spars, also gluing them to the ribs and the shear webs. This makes for a very strong, "I-beam," structure.

A lot of builders just glue the shear webbing material to the edge of the spars, and this seems to work well for them. Another way is to glue the shear webbing between the spars and ribs. The important thing is to make sure that the shear webbing contacts the ribs as well as the spars. If the webs don't touch all the parts the strength is compromised.

Someone wanted to see the scale seat for my Waco, again, so I'll put it in again.

That about does it from the Two Old Scale Guys for another month.

Dick Watz

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Bill Hurt

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J-3 Cub BNF Contents:

- J-3 Cub BNF airplane
- (2) 120 mAh 1S 3.7V 14C LiPo battery
- 1S 3.7 V LiPo battery charger, 0.3A charge rate
- (3) Extra battery Velcro strips
- (4) AA batteries
- 40 Page Instruction Manual

Items Required: DSM2 2,4 GHZ transmitter

Advertised Wingspan: 18.1 in.

Measured: 18.1 in.

Overall Length: 12.2 in.

Measured: 12.2 in.

Advertised flying weight: 0.85 oz (24.0g)

Measured: 1.1 oz with supplied battery

Motor Size: 6mm brushed motor

Radio: Spektrum 2.4 GHz DSM2 control installed

CG:0.866 in. (22 mm +/- 1 to 2 mm) from leading edge of wing at side of fuselage

Prop size: 3.937” x 2.362” (100mm x 60mm)

Recommended Battery: 120 mAh 1S 3.7V 14C LiPo

Distributor: Horizon Hobbies, Inc.

4105 Fieldstone Rd

Champaign, IL 61822

USA

Cost: Retail: $119.99 Street: $89.99

Cheers: This Cub will put a smile on your face. You can fly slow and close enough to appreciate the scale engine details.

Jeers: Receiver is set up with rudder on the right stick but see below.

Manual: It will take longer to read the 40 page instruction manual then to charge the battery, bind your transmitter and set your control throws. The manual covers binding with every kind of DSM2 transmitter there is and even the one that won't work. I only found one area of confusion in the manual. Page 3 tells us "Install the battery in the airplane by placing it into the slot on the bottom of the fuselage with the plug facing toward the front of the airplane". The picture directly below shows it installed with the plug facing the tail. My plug isn't long enough to reach to the front of the battery compartment.

Set up: After reading the instruction manual I bound my DX6i transmitter and the Cub. I next checked control directions and surface throws per page 26 of the manual. On my Cub the rudder push rod was all the way out on a horn that is .625" long. The rudder just barely moved so I moved the push rod into the hole at .500" and it now measured the recommended 6mm at full stick movement. The elevator throw was at the recommended 4mm without adjustment. The manual has a caution not to increase your end points past 100% or it will over drive the servos. I next checked the CG and it was at the recommended 22 mm. I ran the numbers and with a 2.75" cord the .866" (22 mm) CG. The calculations say the CG is at 31.49%. I consider this an aft CG but we will go fly and see how it works as recommended. I checked the RPM so I could run some performance numbers and was surprised to see 7560 RPM on initial power up and a constant 7350 RPM after about 15 seconds. These numbers will indeed provide un-scale and spirited flight performance.

First Flight: The Ultra-Micro J-3 Cub

is a three channel model with control of rudder, elevator and throttle. This little Cub is a Valentine present so I figured it was appropriate to fly it early on the morning of 14 Feb 10. As luck would have it, it was snowing. Not wanting to give up and also not wanting to break my new toy, I continued close observation and I noticed the snow was coming almost straight down, indicating no wind. The OAT (Outside Air Temperature) was 34.2 F and it looked like it was only going to get worse as the day went on. Out we went into the front yard, one last control check, a gentle hand launch at half throttle and we are airborne. I quickly realized I had a tiger by the tail! (*Not a Grissom Tiger! None of those in Madison! -Julia*) The Cub was acting like a tail heavy free flight model from my youth. I didn't have enough rudder throw. I had used full down trim and was still holding a little forward stick to maintain level flight. I finally landed on the driveway in a less than graceful manner, but all was well with the Cub.

I took a minute to analyze the flight, looked at the control surfaces as trimmed and went inside to make adjustments. I measured the trim positions of the controls, centered the transmitter trims and then bent the U shaped adjusters on the rudder and elevator until they matched the positions at landing. I moved the rudder pushrod into the hole at .375" on the horn and checked the rudder throw which is now .355" or (9mm). It just clears the elevators like this without binding. I also have some E-flite 150 mAh batteries, so I put one of these in the nose. The CG is now at .75" or 27.21%. This seems a more normal CG range for a Cub. Checking to see if the wind had started and seeing that it had not, we ventured back out into the snow which was just barley floating around at this point. Second launch was the same as the first, but this time we were flying in a straight line with much improved rudder authority. I was having a blast! I took it up to a safe altitude and checked for stall. The nose dropped and I still had very reasonable response on both the rudder and elevator. The center of the rudder stick still seemed to have a dead spot in it. Loops from level flight were smooth and I had enough power to do as many as I wanted. No, this isn't very scale for a Cub; but I was feeling out the new toy. After several slow flybys, stall turns, high speed passes, barrel rolls, spins, and a couple more loops; I landed on the ice in a perfect Cub manner. The control surfaces have .031 right rudder and .031 down elevator for straight and level flight. I don't see anything out of alignment, but that is what it wants to fly straight.

Overnight I decided to go into the transmitter and see if I could help the little Cub be more user friendly. First I programmed a mix so I have rudder on the rudder stick and the aileron stick still gives rudder as it originally did. While I was into programming I added some reverse Expo so the center of the rudder stick is more sensitive, I guessed at 15% and it seems about right.

The next morning I woke up to more snow on the ground, but blue skies and little wind. Out we went into the back yard in an attempt to get some pictures. Have you ever tried to take a picture of an 18" object in flight and get it centered in the frame of the picture? We were sheltered on the porch and didn't realize that the little Cub was actually flying in a pretty good breeze for its size. We have a very old camera and it's slow to take the picture. After several shots Kim (*Who was taking care of Awesome while you were both outside, huh?--Julia*) was cold and unhappy with the results. We went inside and looked at the weather station data that is just down the road.

Here is what it said:

☺AT 23 F

Dew Point 18 F
Humidity 80%

Wind W @ 6 MPH

Pressure 29.90

DA 833'

This is very impressive considering the flying weight with the 150 mAh battery is only 1.1 oz. The under cambered airfoil is a perfect match for this Cub. It allows slow flight in calm conditions that are beautiful to watch. With the new adjustments, the flight controls feel well balanced. The Cub is just so cute cruising around in a scale manner or you can get crazy and it responds well. If you had asked me if any of the Ultra-Micro models could be flown in wind, I would have said don't do it. Now I will say the Cub can tolerate more then I would have thought.

Indoor Flying: Many years ago we started flying indoor RC during the winter months while we were in Texas. At that time the GWS equipment had just arrived on the scene and I thought my childhood dream of flying a full house (4 channels) small plane had finally arrived. We proceeded to design many small GWS planes out of .25" blue foam. Then the first 2 cell LiPo batteries arrived and we realized another performance increase. Today you can walk into a hobby shop and leave with a semi-scale model that has full house controls and weighs about 1 ounce. You can have it ready to fly in less time than it takes to read the manual. This little Cub looks so nice cruising around in a gym, you will lose track of time and the next thing you know it will be time to leave and you won't want to quit! With the mix I put into the transmitter I am very comfortable making smooth take off runs and

landings. I wasn't doing so well with my old brain trying to do that with the aileron stick. The Cub has a steerable tail wheel so scale taxi maneuvers are all part of the fun. We flew the Cub in a gym that has one full basketball court and little room on the sides and a fairly low ceiling. It flew great in this area.

The Ultra-Micro Cub is cute to look at, fun to fly, and quick to get airborne. The roads were black ice and snow all weekend long. The RC field is 22 miles away. I would not have been able to fly this weekend if it was not for this little Cub.

Rick Grim

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Radio Ramblings

By Tony Stillman

In the past, I have given a few hints for mounting receivers and checking your equipment installation. After speaking with several modelers, it seems that some basic installation information is in order. If you are an "old hand" at radio installation, just look at this as a refresher course in "Radio Installation 101".

In order for your model to be controlled properly by your RC equipment, you have to select the proper equipment to do the job, and then install it properly. A good place to start is with the construction manual that came with the kit/ARF that you have just finished. Most manufacturers will have some suggested equipment for their particular model. One of the more important areas to consider is recommended servo power for each control surface. Check the manual to see if there is a power requirement for servos. If so, check to make sure the servos you have meet the minimum output torque required. Keep in mind that different surfaces may require different output torques. Also, see if ball bearing servos are recommended. This feature will greatly reduce slop in the gear train of a servo by reducing the amount of side play in the output gear. Usually, rudder is a high-power requirement area, at least in aerobatic models. Here again, this is a function of not only the airplane, but of the engine that you have chosen for the model. If you are using the top end range of suggested engine sizes, the increased power and speed will require increased power from your servos, especially the rudder!

As an example, let's consider an Extra 300. Let's assume that our model recommends a .91 to 1.2☺ 4-cycle engine. As the engine displacement (power) increases, the load that is placed on the control surfaces increase. It is also important to determine how YOU want to fly the model. Will you be doing 4-point rolls and snaps, or just boring holes in the sky? Hard-core aerobatics and 3D style flying demand high-torque servos in order to move the control surfaces under these extreme load conditions.

After your selection of servos, make sure you have a receiver battery pack that will do the job, considering the number and type of servos you have chosen. How do you do that? There is really no exacting process, other than actually flying the model and checking how much power you have consumed during the flight. At that point, you can figure out the correct battery size you need to do the job. We will talk about battery selection in future columns, so let's go ahead for now.

Okay, you have your servos and battery pack selected. Good. Let's look at how we should start to install the equipment.

All servos have some kind of rubber grommet insulators to help minimize vibration damage to the servo. Follow the instructions that came with the equipment to install these. However, I want to make one remark here. I have noticed that many pilots don't install the brass eyelets correctly! Yes, there is a correct way! The eyelets are installed from the

BOTTOM of the servo, and pushed UP through the grommet. This leaves the "lip" of the eyelet to rest against the wood rail or servo tray. If the eyelet is installed upside down, the mounting screw will cause the sharp edge of the eyelet to "dig" into the mounting, yielding an over compressed grommet and loss of vibration protection! Yeah, I know this is a minor thing, but anything worth doing is worth doing correctly!

Let's proceed. Before you drill any servo mounting holes, take a look at the recommended servo positions. Verify that your pushrods will align as required and that nothing will be in the way. Moving a servo later is not the end of the world, but a little pre-planning can go a long way to decreasing the total amount of time required to install equipment. Here again, most kit companies have taken the guesswork out of this and have servo tray locations worked out for you in advance. If the trays provided are made of 1/8th lite ply, add a small piece of scrap ply to the bottom of the tray to increase the thickness of the tray so that the screw will have plenty of wood to bite into. If you use rails, use at least 1/4 inch thick spruce, or even better, cut some rails out of 1/4 inch 5-ply plywood, about 3/8 inch wide. These will yield a very strong rail that won't split when you install the servo screws. Pre-drill all the mounting holes, and install the servos and mounting screws/washers. Snug the screw down to the eyelet, but don't over tighten.

Now is the best time to install the receiver, switch harness, and battery pack. Check the balance of the model to find the proper location for the battery, as it might need to move further forward that recommended helping balance the model properly. Once this location is determined, you can proceed.

You need to install some foam rubber on the receiver and battery pack. If the battery pack is to be mounted in the fuel tank area, putting the battery pack inside a plastic bag would be well advised before wrapping it with foam. Using some nice, soft foam (I like the half- inch Hayes foam because it is so light.), cut out some strips using scissors and get a good one-inch of foam around the entire receiver and battery pack. This is very important! Any vibration that can be kept away from the receiver will greatly increase the life of your equipment, and probably the model as well! The key here is to loosely wrap the foam. If you wrap too tightly, the foam won't have any isolation quality left! Use some electrical tape and neatly secure the foam. Don't forget to un-wrap the receiver antenna and route it as required. I usually install the antenna inside a plastic tube inside the fuselage. If you chose to install your antenna internally, make sure that you have enough fuselage length to handle the antenna! It cannot get bunched up, or double back over itself! This will give a very short range, and doom any model.

Slip the battery in place and check the fit. I like to use Vel-tye to secure the receiver and battery packs. Vel-tye is a Velcro type material, but it has the hook on one side and the loop on the other, thereby eliminating the problem of running out of one or the other. This stuff is really nice, and is available in several widths and colors. I usually like the 3/4 inch and 2-inch wide material. I purchase several feet of both types so that I always have some on hand. Depending on the installation, you can screw,

glue, or wrap the Vel-tye to a mounting area and slip in the component and close it up. Very neat and very secure. It is also allows easy access to your equipment, should you need to inspect or replace a receiver or battery pack.

Once that is done, locate and install your switch harness and external charge jack. You might want to consider using some of the very nice "charge switches" that are available today. They feature the charge jack built right into the switch mount, so that you only have to make one cut into the fuselage. They also have a cool door that covers the charge jack to keep out oil and dirt. Some even come with a rubber mounting to isolate it from vibration as well. There are also some new "Safe Switches" out on the market now. These are very nice, in that they are "on" when the switch is open! This means that you can't have a switch go open to crash your model! You could actually turn the switch on, and then literally cut the switch out of the circuit with a knife, and the switch will stay on! Pretty cool and very safe. Radio South has a couple of types that can be purchased through your local hobby store.

There, done! Well, almost. At least the airborne equipment is installed. Does it look neat? Did you think it all out and do a clean job? Just sit back, take a long sip of your favorite beverage (*Iced tea, right? Maybe the Long Island variety.-- Julia*) and look everything over one more time. At this point, you should feel very confident that your equipment is installed securely and protected from vibration and fuel. This is the heart of your radio system, and it must do its job correctly, or all the hard work of building this model may yield only one very short flight!

Now, let's plug in your servos and switch harness. Turn on your transmitter. If you have a computer radio system, select the proper model, then turn on the receiver and check to see that everything works properly. If you are using a computer radio system, now is the time to set up the sub-trims. Install your servo horns as close to the neutral position as you can. Note that you can move the arm or wheel a notch at a time to find a spot that is very close to 90 degrees to the pushrod. In some cases you can get it exactly, but others you might be off a little. That's what sub-trim is for. Select the sub-trim menu (refer to your manual) and select the channel that needs to be adjusted. Increase or decrease the setting until you achieve the 90-degree relationship to the pushrod on all channels. There, that was easy!

We are now ready to install the pushrods and connectors to transfer the power of the servos to the controls. The selection of components here can have a profound effect on how the controls center and how the model flies! There are many, many choices, some good and some bad!

In the future, I'll get into connectors to help you select a system that will yield slop-free controls for your new model. I'll also get back into your letters and comments and cover some "electronics" as well!

Until next month,

Tony Stillman

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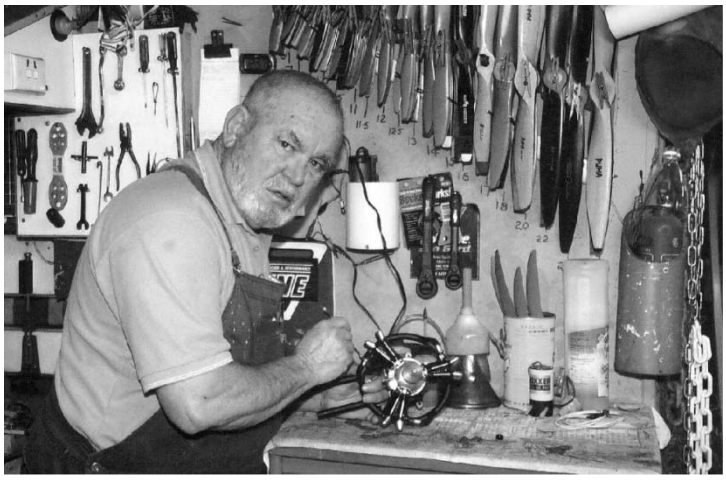
The Oily Hand

by Brian Winch

WHY BE STILL WHEN YOU CAN BE STATIC?

I had a reader of another magazine for which I write take me to task about advice I had given in a recent article. This character was one of the 'arm chair pedantic brigade' whom I would normally disregard or provide a very barbed reply. After all, any and all modelers who write articles for model magazines do it for a bit of pleasure, the contact with other modelers, the enjoyment of being able to help those who need it and to generally discuss their specific model topic - ergo - in my case, engines and model engineering. If any think we are in it for the money - you are having a lend of yourself. Most model magazine owners do the best they can with a payment for articles, but there is just not enough money in the model magazine business to pay wage rates to writers, general expenses and still make an honest dollar for the owner/editor who, really, deserves to see a return on his/her investment. As such, I am king in my castle, and whilst I would not intentionally say anything in detriment to the magazine, I and other writers, need not suffer fools and pedants who write acerbically in green, vitriolic ink. What amused me about this foo…err…character was that he had gone back years,1980 to be precise, to present to me the , as he said, lack of uniformity of information. The recent article related to cowling and engine tuning and the equipment I used and recommended for today - the present time. The information I provided 30 years ago was the best I could THEN and it worked, but we progress and



use the newer and more accurate equipment available to us now. Reading and using old information can lead to the often noted 'perpetuated myths' of modeling. Something written long ago might have been by way of suggestion for a problem in lieu of the correct information which, at the time, was not available. A couple of examples: Lubrication, 30 years ago, was still hinging on no less than 20% castor oil, sometimes even more. (See PHOTO 1) I was

Photo 1: From so many years ago, this was a popular fuel and a quantity that was adequate for a few weeks flying.

using a high grade synthetic at the time, but coping a lot of flack from diehard modelers who would not hear of anything other than loads of castor. Some of them still haunt me. Well, these days we, mostly, use a variety of superior synthetic oils and often at much lower percentages than the older mandatory 20%. Lubrication, engines and ideas change. Again, in those dear dead days I was addicted to the deadly habit of smoking a pipe and smoking in general was very common. Very handy for testing cowls if you smoked; blow a good lungful of smoke into the front aperture and see where the smoke exits. Well, better educated (no more smoking) and after a long fight with the deadly consequence of smoking (aka - the big C), I no longer give that advice. It worked okay then, but!

Another factor of consideration is the availability of equipment. Thirty years back, a tachometer was a valued piece of equipment that did not readily fall into the hands of many modelers. I had several; some from way back and one modern one (at the time). The old ones were okay…just...and the modern one was an analogue instrument that was very good for the time, but not really easy to obtain a very precise reading. I also had a laboratory grade thermocouple instrument for checking temperatures, but this was not within the reach or needs of most modelers. As such, my information for tuning an engine and checking the airflow in a cowl suited the times and the equipment (or lack thereof) a modeler might have on hand. Okay, move on up 30 years. For a start, it is a fact, and I have no argument on this, modelers have much shallower pockets than 30 years back. They don't have to reach so far down to find rude amounts of spare cash. As well, modeling equipment is so much lower in cost these days. You don't agree? One example: A K&B 40 RC cost $40.00 in Australia in 1973. This represented 41.66% of my weekly wage (before tax). At that rate, the same engine would now cost approximately $700.00! (If I was still working full time.). Before we move on, talking about money as we are, one of my observations is that money would be so much better if you didn't have to spend so much time earning it. Then again, as the bloke said when he was telling how hard he worked, "Man, I gotta tell you…I really earned a dollar last week." "Yeah," said the other fellow, "but I bet the boss still paid you a week's wages."

What IS the cost of living? The way I see it is that it is 100% commensurate with the wages you earn. Unfortunately, modeling costs aren't generally factored into that balance sheet. However, modelers have ways with these things. Either that or can come up with some astoundingly convincing stories to cover the reason for their expenditure on the latest bit of equipment they just HAD to have. Hasn't it always been so?

MOVING WITH THE TIMES

Okay, 2010 and my advice on tuning, for example is now different. The engine still has to be tuned correctly, but we now have accurate equipment to assist us and to take out the judgment factor. Human ears are not good when it comes to measuring the RPM of an engine and listening to the RPM is not good for human ears. ("How many rev's she doin' Jed?" "Just after 4 o'clock. Why? Ya wanna go home yet?'). After many years of practice running a few thousand engines, (repairs, testing, general modeling), I can hear pretty well when an engine is at peak RPM with the correct tune. Quite a few long time modelers would be able to do this as you get to know the sound of lean, rich and just right. However, this is not going to tell me the RPM the engine is doing. Very similar is the practice I see at times on the flying field. The engine is tuned, often times even after it has just run a full flight perfectly, and the model is then held nose high - close to 90º - to check the tuning is 'right'. Well, this is a false test as conditions with the model held in this position will not occur when the model is flying. The model is being held in a static position, no forward motion. The fuel is sitting in the tank with nothing more than, maybe, muffler pressure acting on it and that is not helping much if at all. The engine has to pull the fuel all the way up the line without any assistance from the forces of nature. Just one of nature's forces, centrifugal force, for example, has a lot of influence on the fuel in the tank. As the model moves forward the fuel will flow back to the rear of the tank and this applies some pressure on the fuel feed up the line. Then there is a harmony in the force pushing the fuel back and it tends to move forward again, but just for a moment as the model is very rarely flying in a smooth and level plane. A flick to right or left, even up or down and the fuel is subjected to centrifugal then centripetal force. The slightest movement of the model sets up another force on the liquid fuel, and if we could see it, it is moving around like a dog with a bad biting flea in a spot it can't reach. You can get into some very muddy water when you consider fluid dynamics and the sub discipline, hydrodynamics. A Reynolds number would apply to the ratio between inertial and viscous forces of fuel in the tank of a model aircraft (as it does to full size aircraft), but we are getting into the realm of 'Don't go there.' for our model purposes. Still, it gives thought to what I said about holding the nose of the model vertically in a static situation.

Righto then, where is this leading, you ask. Well, back to the modern equipment on offer these days, of course. (See PHOTO 2) Quite some years back now a retired electronics engineer, also a modeler, developed and produced a super accurate tachometer that could be used for almost any

Photo 2: Tacho's come in many sizes and costs will suit just about any pocket.

application of modeling. Normal props, ducted fans and the then new turbine engines were all catered for with an accuracy previously not generally available and at a price that was most attractive to modelers serious about engine operation. The tacho (tachometer) was sold under the logo of TCN, and I reckon any engine tester would have had one as soon he could send off the cash (mail order job). I still have mine operating good as gold, and I also have the latter day version that is freely and commercially available. I don't know what happened to the original designer/builder, (I think his name was maybe John White?? Ring a bell, anybody?) as the current model is sold under the FROMECO name. (See PHOTO 3) Still as accurate and just as sensitive, but it has an added feature that is a boon to engine testers. The added feature is a two line readout screen and this is great for me. The top line reads and HOLDS the maximum RPM detected while the bottom line records variations. This can tell you quite a lot about an engine and all without the need to take notes. Almost all engines will record the highest RPM when first started due to tighter internal fits aided by the viscosity sealing of the fuel mix. As the engine heats up to maximum operating temperature it will generally drop off a hundred or so RPM. How much it drops off tells a story about internal fits, tuning, fuel quality, lubrication, weather conditions at the time, glow plug efficiency, propeller load to name a few. Bit more accurate than listening to a model held nose high? On the test bench, when I see that the maximum RPM has stabilized; I flick the tacho off and on in order to clear the initial maximum reading and record the constant; then wind down to test idle RPM. When I have my readings, I remember the idle reading as I record it then refer to the fixed reading for the maximum reading. Maybe one day an electronic guru at Fromeco will fit a button switch to lock a reading so you end up with the auto locked top line and manual locked bottom line (Hint, hint). Okay, maybe you don't want to go to the expense at this stage of a top end tacho like that. In that case, a browse around a good model shop will display a variety of very good small tachometers that are quite accurate, (I have 6 or so and they are all surprisingly accurate.) and not a great outlay of modeling dosh (English type English for cash. Same as boodle, bread, brass, dough, loot etc.).

Photo 3: My later and original TNC tachometers, still both valuable instruments to me.

LET'S USE IT

Finally, you bought a tachometer, so now we will use it on the field before flying the model for the first flight of the day. Open the main needle about 2 to 3 turns and start the engine. It will probably be rich, but let it run until it warms up. From BEHIND the propeller, aim the tachometer and note the reading as you very slowly wind the needle in. After a bit of adjusting, the RPM reading will stabilize and you can note

the sound of the engine. A two stroke will have a crisp sound; a four stroke will have an even sound. If the RPM begins to drop down, open the needle 2 clicks and observe again. Once you have a steady RPM, open the needle a click at a time to reduce the RPM by 600 or more to a maximum of 1,000 depending on the engine and the manufacturer's instruction. This is GROUND RPM, and this will increase when the model is no longer static, that is; flying. As you can see, if you set the engine at full RPM on the ground it will lean out in the air, over rev to the detriment of the engine and maybe the model if the engine quits. Well, now, you have recorded the ground RPM and flown the model. All is good, as it should be. Make a note of the ground RPM you recorded and keep this for future reference. It will be the bench mark for that engine unless you change the prop, plug or fuel. No more winding the needle, pointing the nose in the air, guessing that all is correct. Next flight, that day or any day after, start the engine and let it warm and take a reading with your tacho. If there is a notable change in the weather, the tacho will indicate the need for a very slight re-tuning. A lower, but steady RPM, indicates a rich mix (less oxygen in the air). An increase in RPM indicates a lean mix (more oxygen in the air), so wind the needle in the appropriate direction for the minor change needed. With the engine originally set at the ground RPM, if the engine is a little lean on a subsequent start, it is not going to do any harm as you have your 600 to 1,000 RPM safety margin. All very technical, but soooo easy when you have a simple tachometer and you USE it.

Before we move onto our next good bit of gear; a note about the idle mix needle. This is a definite no go area once a setting has been established. This mixture control is very insensitive to changing conditions, so it does not need to be constantly altered. Only when you get into the large capacity gasoline engines would you consider it. However, even with these, it would be an extreme weather change that might require a tiny touch on the idle mix. Generally, it is the same as the smaller glow engine engines; leave it be while it is working.

THE HEAT OF THE MOMENT

As I mentioned earlier, I have a thermocouple instrument for recording temperatures. (See PHOTO 4) The sensor is a tiny bead on the junction of two wires and this bead is placed in or on the area where you want to record the temperature. This is quite okay for bench work, but not so good for cowled engines or general field work. You can see quite excellent results to indicate how important correct tuning is and the value of the lubrication type and amount when you monitor the engine with a heat sensor. In some cases, one click leaner will cause a dramatic increase in temperature. When I used, or occasionally still use, the thermocouple I 'implant' the bead in the rear of the engine tucked up tight in the gap between the top and

second fin directly below the plug. No prop wash over this area and higher temperatures (see later) are recorded, so my reading is a reference for other engines. Not much use giving the recorded temperatures in a magazine article as such due to the specialized equipment and the fact that it is virtually useful only for bench testing. Realizing this shortcoming, I eventually sought out and purchased a professional type of heat sensor, one that reads the surface heat over an area defined by the closeness of the device to the object being tested. This is like a camera lens with the view acceptance angle. Close up and you see a small part of the item; further away and you see a larger area. This quite expensive heat sensor was used in the oven, furnace and foundry industry, by way of example, to test the internal heat after either initial manufacture or service repairs. Not long after having purchased this gun sensor, the manufacturing company produced another version that had a smaller angle of acceptance, plus the best addition ever for me: a Laser pointer beam. (See PHOTOS 5-6-7) With it I could put the red dot on any section of the engine, record (and hold if needed) the temperature, measure the distance over which I had taken the reading and simply refer to a chart to find how much area of the engine I had been covering. Apart from tuning, it was (is) great for failing bearings, misalignment in a front housing, areas contact rubbing, transferred heat and even air leaks in 4 stroke manifolds. Another very useful application is the testing of mufflers, particularly after market and homemade units. On the bench, I can test the required heat for removing tight liners from engine barrels, heat of the case to fit

Photo 4: Simple and inexpensive sensor and the latest Laser pointer sensor.

Photo 5: Another new type sensor reading my cool finger.

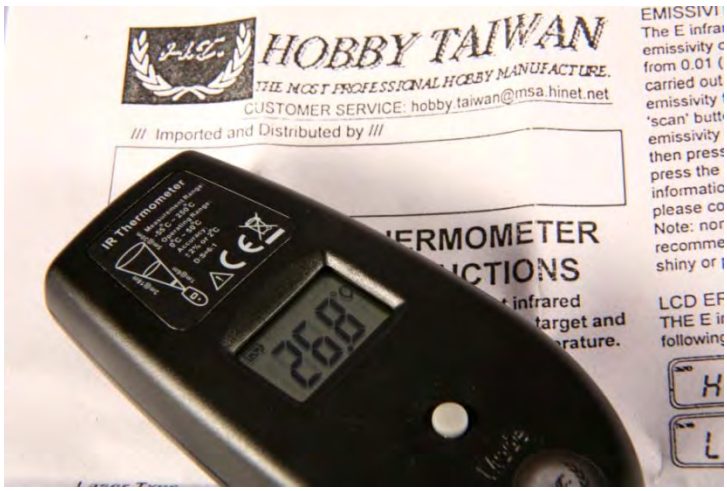


Photo 6: Readily available sensor from modeling outlets and a nice price.

Photo 7: Pin pointing the area of the engine inside a cowl. You can gain a lot of valuable information carrying out this type of test.

new bearings, heat of various metals for annealing, heat for delicate solder or silver brazing jobs and so on. It's all very nice and handy, but the one use that is far and above most is the measurement inside the cowl of a model. (See PHOTO 8) I am giving you just a maximum figure here for engine surface heat as there are many variations and many various engines. If I was to give a specific figure it would be a problem for many modelers as they would try to achieve that precise temperature which would be difficult in some cases and unnecessary in others. As a guide, if you are reading 100 or more º C you are in the danger zone. Yes, I know - a bit gray, but I am now going to discuss with you the method of obtaining your own accurate figure.

Prepare a notepad with the words HEAD, BARREL, FRONT HOUSING, MUFFLER, REAR OF BARREL and REAR OF HEAD written in a column with space provided to insert the figures obtained. (*How about using an Excel spreadsheet for all computer crazy pilots out there? Julia*)

Set up your engine on a test stand with free space all around it. This is important. I prefer you don't carry out this check with the engine in the model with the cowl removed as the proximity of the rear of the engine to the backplate is a very important factor of cooling. We need to test in ideal conditions. Get the engine running and tuned with the tachometer as I previously discussed with you and use the fuel and propeller you intend to use when the engine is fitted in the model. With the engine running a maximum RPM; study the propeller for a few seconds. Just look at it and note the blurred circle described by the blades. Note the safe clearance distance and with this mental picture and awareness, you are much less likely to feed the temperature gauge or your hand into that cutting arc. You will be concentrating on the instrument readout and we all know a momentary lack of concentration often results in chopped fingers.

Take readings of each area in your note pad (*Or printed Excel spreadsheet. Julia*) and record the results. Do it from one side then repeat on the other side. While you are in the testing mode and mood, do the same test with a couple of different propellers and any other variation you might consider such as a different muffler, different fuel, more or less oil in the fuel. Another interesting test worth considering is with a spinner fitted to the engine. When you have exhausted all possible considerations you will have a very comprehensive log of parameters for future operation, a reference for how things should be with that engine. Now, you know what I am going to say next; I am sure. Fit the engine to your model and check your heat references, first without the cowl with emphasis on the rear of the engine. The area behind the rear of the engine and the front of the firewall is a notorious hot spot as air often does not circulate the zone. If you note a marked increase in heat; consider an air scoop to direct cool air into this hot zone. Now, fit the cowl and take readings through the cowl openings. Note the temperatures. Leave the engine running at full RPM for about 5 or so minutes, then take more readings and note the temperatures. Stop the engine and compare notes. I would consider any reading 5º above your reference temperature to require some attention. Before you say it, no, the model flying with air flowing in from the forward motion might not fix the problem; quite the contrary really. If the cowl has insufficient air flow exit, it will compound the problem as the extra air forcing in will heat up as it cannot escape and up goes the engine temperature. The running will suffer due to the heated air being fed into the carburetor. Obviously, without onboard equipment to measure and record the temperature, your ground test is the best you can do. Certainly better than, "I hope it doesn't overheat". I've always considered 'hope' to be within the realms of 'the luck of the draw.'

You are giving yourself and your engine/model better than starting odds if you use the methods I have just discussed with you and maintain an interest and open mind to new or modified information and the equipment to assist you.

Before I move on, away from new equipment, this week I received a large box from our largest wholesale company with new items to test; items within my sphere of use and understanding. First was the new gas engine from O.S., nice bit of gear, then the new Alpha 110 four stroke with a fitted pump, a range of incidental items and two new chargers; the latest bell ringing, whistle blowing, steam generating all powerful chargers hot off the assembly bench. I have a considerable range of chargers in my 'charging bay' of the workshop and each is a great advance on the previous model. You wonder where advance technology will go. To keep me humble, I have hanging on the wall next to the bench, the original wall wart chargers from my very first digital radios as well as the current ones from new radios that still provide them. The first charger was rated at a nominal 50 mAh - anything from 38 to 60 mAh was the range. In those long gone days the discussion and worry was how long you could leave the charger on? What if you had only one flight and wanted to recharge? How long for? How many times did you need to charge a new battery to get maximum capacity? Sometimes the instructions indicated an initials charge of 36 hours and this was confusing in those days. Due to the inefficiency of those chargers and the time it took to charge the battery pack; you multiplied the calculated charge time by 1.4 to obtain maximum charge. Doing that, the popular, at the time, 500 mAh R/X pack would be charged for 14 hours with the 50 mAh charger; or longer if you forget to switch it off. I remember a great advance when a radio manufacturer produced a FAST charger and cycler. It had a charge capacity of 75 mAh. Wow! That's really pumping the power in!

Moving on to this week again, one of the chargers sent for my review will charge and/or cycle four battery packs simultaneously at different rates, different pack sizes, different batteries and you can have some charging and some discharging all at the same time. That is just a brief rundown on what it will do as I have just sniffed at the specifications so far. I am sure I read something about cooking toast and making coffee somewhere on the box. I'll bet you guessed that I am greatly in favor of new technology. It keeps me up to date and I don't get stale with age. (*Like that toast and coffee, huh? Julia*)

Hold on! I just went downstairs as the doorbell screamed at me and the parcel delivery man handed me a parcel from Saito, the latest 30 cc gas engine and the extremely limited edition gold plated, 50th anniversary .30 (5 cc) glow engine. Both of them are very nice and the latest in power and presentation.

WHAT METAL IS THAT?

Just a bit of fun here before the jughead fool starts to annoy me. (*I thought he took a trip, Bri? He made it back already? Julia*) For readers who know or think about various alloys, man-made metals, you would have knowledge of some of the additives to a base metal to produce a desirable alloy. For instance, chrome, nickel and molybdenum is added, with a few other ingredients, to basic iron to produce a high tensile steel (simple example). Silicon, copper plus a few other shreds added to bauxite, from which we derive aluminum, produces a high tensile aluminum alloy for model engine pistons for example. Okay, I am quoting the ingredients

from a pack that arrived here this week and I would like you to consider what the final product might be. The first in with the nearest correct answer wins the FROSTED ELEMENT GLOW PLUG award. Your name as the winner will be published for the worldwide audience who read this fine magazine. Read as follows: Magnesium Oxide, Ferric Pyrophosphate, Zinc Sulphate, Magnesium Suphate, Copper Sulphate, Potassium Iodide, Sodium Molybdate, Chromium Chloride, Sodium Selenite. There are other ingredients, but the above will do for a start and as a little clue, the final product is used in water.

UP, UP AND AWAY

The 'goof' has been playing around with balloons and helium gas lately; driving me mad when he inhales a squirt of gas which causes him to speak with a very high pitched voice. True story: a symptom of inhaling helium. He has been attaching weights to various size balloons and letting them float away. Something devious was building up in his pigeon brain. In the meantime, a great new multi-lane motorway is being built, starting just around the corner from my place. The road is very thick concrete with multiple layers of reinforcing mesh and a cushion base; all very nice. For the concrete, which has to be a, virtual, non-stop process per long section, very large tip trucks are used to carry and dump the mix which is then leveled, screeded, surface finished in one go with a monster machine. Huge steel containers shaped like a hot air balloon are set up on a complex framework. The mixed concrete is pumped into the containers, a truck drives under and within the framework structure and a measured load of concrete is dumped in the tray to be carted off. The container holds probably 10 truckloads of concrete at any given time. These containers are spaced out along the section of the motorway, and when that section is complete; they are moved to serve the next section. Great progress. Well, a brand new container was unloaded very close to my workshop two days back, ready to be hoisted up and put into operation. As I said, the container is in the shape of a super large hot air balloon and it has tags around the middle for attachment of the framework. The night after it was unloaded, tadpole brain sneaked around to it and painted it all over with several layers of quick set latex, a rubber compound used for molding etc. Before first light, he peeled the layer off and he then had, possibly, the world's largest party balloon. His idea was to fit wooden plates in the sections formed by the tags, seal them with more latex and use the wood tags to attach ropes for the purpose of suspending a basket to carry him, plus food and drink, and support a bracket onto which he had attached a 100cc gas engine with propeller. Hot air balloons are controlled by the vagaries of the wind. However, a gas filled balloon could be steered wherever by using the gas engine. I really think it has been done in a similar way before. Dirigibles, zeppelins, airships come to mind.

Later that day a truck bought a load of helium gas bottles which he quickly started to use to fill the balloon. He had a large rubber hose up the spout of the balloon and a strong cord holding the spout tight on the hose. Little problem cropped up with the helium. By mistake, one of the gas bottles contained nitrous oxide, commonly known as 'laughing gas'. Well, now you have it! Helium's on board to give you a squeaky voice and nitrous oxide to make you laugh. Anyway, he used it, as well, as he figured gas was gas and he needed

every bottle to fill this five story high balloon. Donning his 'Little Wonder Intrepid Flying Suit and Parachute' ($12.50 at Wal-Mart), he climbed into the basket, waved to the crowd watching (me, a kid from down the road and a stray dog) and cut the tether rope. The balloon started to lift up and it looked like it was a great success. He lent over the side platform and flicked the prop of the gas engine which started instantly. Problem was, the prop caught a length of dangling cord and ripped it down to wrap around the crankshaft. Next problem was, the cord was used to tie to opening of the balloon, the nozzle part where it had been filled. Well, you know what happens when you untie the nozzle of a balloon and the air races out…exactly what happened here! With a tremendous 'PHWAAAAAAARP - BLOOOOIE - BLURRRRZLE' the balloon was accelerating upwards faster than any jet aircraft ever climbed. The mix of helium and nitrous oxide gas was pouring out the nozzle over Jell-O brain, affecting his voice as I said before. The balloon was now ripping in all directions as it disappeared upwards, and you could hear the 'Bronx Cheer' from the balloon mixed in with this high pitched voice screaming, "heeeelp - giggle giggle - heeelp". Apart from the 'help' calls, by the sounds of the giggling, it sounded like he was enjoying himself. I hope he gets time to eat the nice lunch he packed before the balloon runs out of gas. Well, the balloon is out of sight now and the noises have faded away so let's have a quiet moment whilst contemplating…

…APRILWUN -D☺T ROT - DOT CON

In this section we are exploring the weird world of strange people and the odd things they say or write. These are 'signs of the times' I have noted at times that have been written and installed by 'people in authority' to guide us, warn us or…simply confuse us.

Covering engine topics and working with metal for models. Send your comments or questions to:

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International Response coupon (Post Office) required if you want a written reply.

Webb Scale

by Gary Webb

It is with a heavy heart that I start this month's column. Mr. Lee "Buddy" Archer, known as the only Ace of the Tuskegee Airmen and one of America's true WWII heroes passed away on January 27, at the age of 90. (Photo 1) I feel blessed to have had the privilege to talk with him on many occasions, both on the phone and in person; the last time being an honor ceremony here in Dayton, Ohio last September. Mr. Archer flew 169 combat missions during his career as an officer in the USAAF/USAF. He retired after 29 years as a Lt. Colonel in 1970.

He was credited with five aerial victories, and destroying six aircraft on the ground. He was awarded numerous medals, including the Distinguished Flying Cross and Air Medal with numerous clusters. He was raised in Harlem, and was attending New York University when he joined the U.S. Army in 1941. He originally applied for flight school, but was rejected because of his race. (Side note: all of the Tuskegee Airmen were required to have at least two years of college before they were even considered for the pilot training program while the white pilots only needed a high school diploma.). He was trained as a telegrapher for field-network communications where he earned a promotion to Acting Sergeant and became an instructor. He expressed strong interest in the pilot training program and was allowed to enter

Thank's Buddy. You will be missed. You served this country and helped defend her when she need you. Fair winds and clear sky's forever for you and your family.

Tony

Photo 1: Black and white photo taken of Lee "Buddy" Archer and his famed "Ina the Macon Bell" C model Mustang during WWII

pilot training in 1942 through the pilot training program at Tuskegee, Alabama where he graduated first in his class and was commissioned as a 2nd Lieutenant and assigned to the 302 Fighter Squadron under the 332nd Fighter Group. Excerpts from the Red Tail News

Wow!! I just finished blowing about a foot of snow off the driveway and sidewalks and now it's doing it all over again!!! ARG! I remember when I used to make my own snow skis for some of my 40-60 size high wing models so that I could fly during the winter months when snow was on the ground. Here's an explanation for you in the south: we up here in the north get something called winter sand all over the place during December, January and February. Kind of reminds you of white beach sand down at Daytona, only much colder to walk barefoot on. I would make a hardwood form, then bend soaked plywood sheets around it with carpenters glue and then clamp until dry. I would then finish them with epoxy and mount them on the planes existing wheel axles with a spring to keep the ski tips up while in flight. Landing with the ski tips pointing down can have disastrous results. Watch the plane going across a freshly snowed field with two tiny ski marks, and then see them stop in the middle of the field as the plane lifts off was fun. Of course, frozen fingers and getting that jelled oil off the model was real fun too.

Oh yeah, back to scale…sorry "old timers" creeping in.

Let's see, where were we? Oh yes, Robert had just installed the engine using a custom made aluminum motor mount that he had made locally

Photo 2: Robert's custom made aluminum engine mount; strong but light weight.

at a fabrication shop.(Photo 2) It looks to be very heavy, but in reality it is very light. That mount will never fail! He then realized as stated before that the fiberglass cowl supplied by Ziroli was not of the correct shape for the A6M2, so he decide to make his own from wood. He first made a frame of the correct size and then proceeded to add layers of wetted 1/64 ply and balsa sheets that he sandwiched together to make up the cowl. After it dried he added a couple of layers of 1/16" balsa so that he could sand the whole rear cowling smooth. The frame would act as the cowls formers. The front of the cowl was made from a sheet of 1/8" light ply approximately 1/16" larger in diameter of the cowl. He then added three layers of ½" balsa to form the front of the cowl. Here is where it gets neat. As they say "necessity is the mother of all invention". The 1/8" light ply front stiffener had not had the large hole cut out and was still solid. He found the center and drilled a hole in it and then mounts an arbor to it and mounted the cowling in his upright drill press and proceeded to sand the entire cowl as if it was in a lathe. Ingenious, huh?

It was smooth enough that he decided that glassing it was not needed; he only put resin over it to seal the wood grain. He then cut out the front center of the cowl and then mounted it to the fuse using hidden mounting bolts. (Photo 3) He then installed 1/8" X ¼" Spruce stock in the upper inside of the cowl where the troughs where placed for the machine gun exits. After cutting the channels he inlayed 1/64th ply into the channels and held the ply in place with the correct diameter wooden dowels. (Photo 4)

Photo 3: Custom built cowing using light ply and balsa. Notice the internal light frame and Spruce in upper cowling for the gun channels cut out areas.

In Photo 5, you can see how he removed part of the lower chin scoop to allow for the engine cylinder clearance. In the air you will never notice this, and in all the static rules this is not an item for deduction. He created cowl flaps out of the fiberglass flight skin (.010 thick) with three layers each, wrapped around the cowl to give them shape. He even added small triangle strips to the edges to simulate the thickness of the real flaps at their edges. When finished and after final paint, he installed them using Goop to give them a flexible bond.

While the cowl was drying he glassed the center float, Photo 6, using Z- poxy finishing resin (I use this exclusively myself, also.) and a ¾ oz. cloth. The next procedure is repeated for all glassed surfaces. He then wet-sanded the resin, and then he sprayed a light coat of primer to fine the high and low spots. Photo 7. From this point he sanded and filled using light weight body filler until the desired finish was achieved. He proceeded with the process for the entire model of sanding and filling, and then reapplying primer until he was satisfied with the surface finish. The model was now ready to apply the surface detail to it. This is where it really gets fun.

Robert had not attempted doing surface detail to a model as of yet and had just planned to paint the model and get it flying ASAP. After looking at all the work he had put into designing, building and finishing the model, I

Photo 4: Front view of finished cowl, showing the cut channels of the fuse mounted machine guns that were fired over the top of the cowl.

Photo 5: Finished bottom of cowl showing cut out in the lower scoop to accommodate the engine head. Note the cowl flap opening in rear for cooling and scale appearance. The flaps will be installed before final paint. Also notice the reinforced main float chine areas along the bottom of the float.

convinced him that the extra work in applying the surface detail would create an outstanding model that he would be extremely proud of. Of course, I lied and told him it would only take a few hours

extra. LOL He won't even talk to me anymore! Heheheheheheh!

Photo 6: Main float after being fiber glassed with ¾ oz. cloth and Zpoxy resin.

JUST KIDDING!!!

The first step was using the plastic model that he was using for an outline to also show him where to place all the panel lines, hatch and inspection panels, and then all those flush rivets. The trick to this is coming up with a scale multiplier (conversion factor) so you don't have to keep going back to the model every time to

Photo 7: Main float showing the on going process of priming, sanding, filling, and then re-priming to get a truly smooth finish.

figure it out. My simple method is just to measure the length of the drawing or plastic model fuse

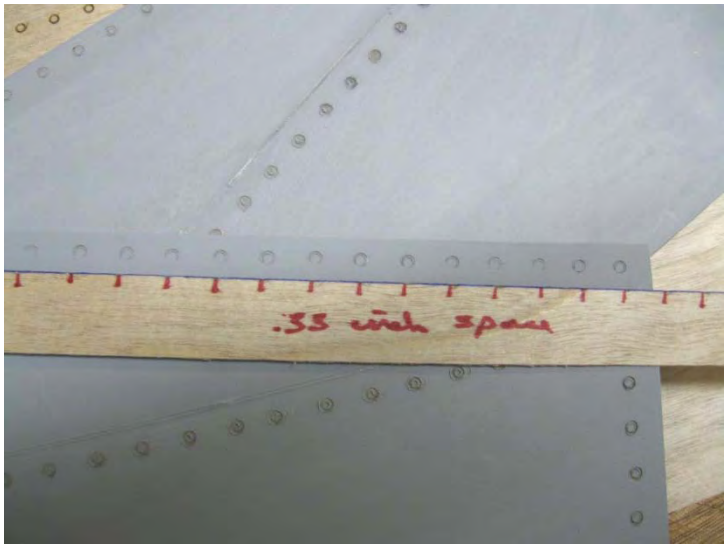


Photo 8: Robert's homemade rivet spacing guide.

length and wing span then divide the smaller into the larger to get the multiplier number. So you measure the length of a panel line on the drawing or plastic model reference, then multiply that number by the established multiplier number and that is how long it should be on the model. You measure on the reference how far along the fuse or wing panel is to where a surface detail is then using the multiplier to position it on the model. He then laid out all the panel lines using 1/32" vinyl chart tape. The trick to not cutting into the surface while cutting the tape on the model surface is by placing the razor blade onto the tape and then pull the loose end up against the tape while letting the blade do all the work while not applying a lot of downward pressure to the tape. Make sure you use new sharp blades and change them out regularly. To simulate the raised removable inspection panels, you can use either flight metal that is a thin aluminum sheet with an adhesive applied to the back, or (me being frugal; read cheap) you can use metal duck tape from your local hardware store. It, too, is a thin sheet of aluminum with an adhesive applied to the back. In either case, just cut to size with sharp scissors, peel the backing and apply to the surface with a soft plastic squeegee. Here is where you will find out just how well you did the surface finish. The thin aluminum sheet will show any and all surface flaws. Make sure the surface is as smooth as metal before you start the surface detail or you will not be happy with the results. Robert took to this like a duck to water. After all, it is a sea plane. After I had explained the procedure, he went to town and had all the panel line and hatches down in no time. I was amazed at how well he did it for his first time! To simulate the fairings around the stab and wing junctures, we used three layers of masking tape, one over the other to create thickness. Then apply filler up to the tape and out from the tape about an inch or so. After it cures, you just blend the filler into the surrounding areas and off the top of the tape. When you remove the tape you have the appearance of the fairing with little added weight. I used this method on my T-28 to good effect.

Photo 9: Homemade flush rivet making tool consisting of variable heat soldering iron, brass tubing to match the needed diameter of the rivets, and wheel collar to clamp the brass to the heating tip.

He then sprayed a light coat of primer again over the entire model concentrating on getting good coverage over the tape and panel lines. He then removed all of the chart tape revealing the inset panel lines. Make sure you pull the tape back over itself to get the sharpest lines. After the tape is removed, you will want to lightly sand over the panel lines with 400 grit sandpaper attached to a wide flat sanding block to remove any fuzz or flashing.

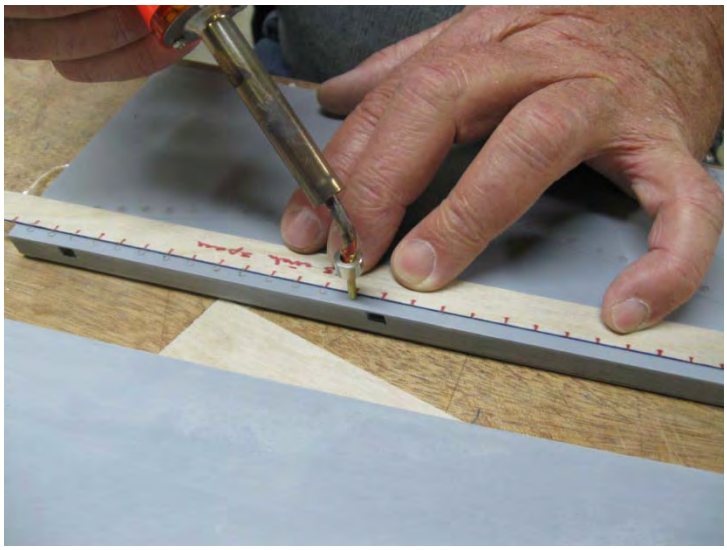


Photo 10: Robert showing the proper way to create rivets. Use just enough heat to cut through the primer and not the glass. You should have to use very little pressure. Clean the tip often with solvent to keep it clean.

Next you will apply all those flush rivets. I use my trusty Top Flight rivet template that I showed in a previous column to mark where they go on the surface to get the correct spacing. Robert came up with his own scale using the multiplier, see Photo 8. In Photo 9, is my most secret black ops flush rivet maker. You can see that many hours went into this invention. It is comprised of a Radio Shack duel heat, 15W, 30W soldering iron with the tip filed down so a piece of brass tubing with the correct diameter is placed over it and then held on with a highly technical clamping devise. Okay, it's just a wheel collar I had lying around. To make the tubing easer to clamp to the tip, I split it with a thin cut off wheel so that the smaller diameter tubing will fit over the tip. Notice I have bent the tip so that it will allow Robert a more comfortable position to hold the iron in while making the rivets. Also notice in the photo that the inside of the end of the brass tube has been tapered using an exacto blade. This will allow sharper rivets and thinner rings.

Photo 10 shows Robert in the process of making the rivets. Start out with the lower heat setting. You just want to melt the primer and not go through the glass. I highly recommend doing the bottom of all surfaces first then do the top side last. This gives you practice, and any mistakes won't show on bottom as much. This is really BS. Doing the bottom first and seeing how much work you have done, even if you want to quit; you can't because it would look stupid to have the bottom done and not the top. Hehehehe.

If you do the top first you might say to yourself, no one will see the bottom and not do it. I can tell you though; once you get into a rhythm it will go fairly quick. Figure about ten to maybe twenty hours. I know that may seem a lot, but when you show up at the field with all that surface detail on your model and all the guys are drooling over your model you will know it was worth it. The pride of doing a job well is part of the building experience. You cannot get that feeling assembling an ARF. Also, when you get a panel done, even in primer, you will be taken back at how great it looks. Check out photo 11. Isn't that just awesome?

Photo 11: Top of wing panel surface detail finished. Time to just set back and enjoy the fruits of your labor. Awesome!

Well, time for me to call it a month. Stay tuned for final paint and weathering. This bird just keeps getting better and better!

Fair winds and blue skies my scale friends,

Gary Webb

gcwent@woh.rr.com

Fun Aerobatics

by Ed Moorman

MANEUVER OF THE MONTH:

Loops with Snap Rolls-Part 1

Let's face it; a loop is a pretty basic and easy maneuver. You pull back on the stick and the plane goes around; nothing much to it. As you get more proficient, just doing a loop isn't a challenge and you want something better. Okay, you can do a snap roll at the top of the loop. There are two types of loops with snaps, inside and outside. The inside loop with a snap roll at the top is called an avalanche. The outside loop with a snap roll at the top is called the blizzard. Both of these "snow" maneuvers are good for winter reading and spring practice. This month I'll cover the inside version, the avalanche. Next month, I'll cover the blizzard.

DESCRIPTION OF THE AVALANCHE:

The avalanche is an inside loop with a snap roll in the top portion of the loop. You pull up for a normal loop, then start the snap roll slightly before the exact top center of the loop so it will finish the same distance past the top center of the loop. Your plane will be inverted when you start the snap roll and end up inverted. After the snap roll is complete you continue around the loop, leveling off at the bottom.

KEYS TO DOING THE AVALANCHE:

The key to the avalanche is being able to do a snap roll. The maneuver is not hard provided your plane does a snap roll well. If you don't do

many snap rolls, you need to take your plane up and practice a few to see how your plane reacts. Start your practice snap rolls from a climb for your snap rather than from level flight. This will simulate the slower speed your plane will be at when you start the snap during the avalanche. You can check the snap roll stick positions on the RC Report Maneuver Card.

AIRPLANE SET-UP FOR DOING THE AVALANCHE:

Many sport planes won't break cleanly into a snap roll, but will barrel roll for a quarter to a half of a roll, then break into the snap as the speed slows down. This makes the maneuver harder because the plane seems like it's just getting going into the snap really well when you need to release the controls to stop it. Exactly one snap roll with a small plane (anything .91 and under powered) is not easy. Give one snap a try

starting from a climb with the speed slowing to see what happens. See if you can stop the roll with the wings level.

If you are having trouble getting one snap, here's a few things you can try. First, set in lots of rudder. Most sport fliers don't use a lot of rudder movement and control and many sport planes do not have a very large rudder. Set in at least 30 degrees of travel on each side. Hopefully, this will kick one wing forward and the other rearward, letting it stall and start the snap. Second, set in more elevator on high rate and use high rate for this maneuver. If the plane gets jumpy on you and your transmitter has exponential, this is the time to use it. One note on expo, Futaba and Hitec use NEGATIVE expo and JR uses POSITIVE expo. Finally, try moving the CG rearward by shifting your battery or using some stick-on weight.

DOING THE AVALANCHE

First, you always start from the Standard Set-up. Using the same starting position lets you learn maneuvers faster because you see the maneuver from the same position and are able to more quickly duplicate it. It also makes it easier to notice any errors you make.

STANDARD SET-UP:

1. Full power, 2. Parallel to the runway, 3. One mistake high. The avalanche, just like the basic loop, should be started flying into the wind.

What to do:

Step 1: Fly parallel to the runway and when you are in front of yourself, begin a regular inside loop. You shouldn't need full up elevator. You want a fairly good-sized loop, not the biggest your plane will do, but not a real tight one.

Step 2: Just before you get to the top, put in snap roll controls. Check the RC Report Maneuver Card for stick positions. You should have practiced snap rolls before trying the avalanche. Release the controls so your plane stops at one snap roll. (HINT: After you release the controls, put in and release a little opposite rudder. This will stop your plane quicker and help keep you on your flight path.) The snap roll should be started so that the plane passes through the top of the loop during the snap roll. It will take some practice with your plane to see when to start the snap. (HINT: It is better to start a little early than a little late. If you start late, you'll be going straight down on your recovery.)

Step 3: After you complete the snap roll, continue around the inside loop. Try to finish up at the same altitude you started from.

Errors: Your plane may pull off to one side during the snap roll. This is a very common problem, especially with a short-coupled fun fly plane or one that barrel rolls first, before breaking into a snap. As the plane flies through the snap, the fuselage is at an angle so it sort of makes a "cone" in the sky rather than staying on a line like in an aileron roll. This causes the plane to end up yawed off at an angle to the original flight path of the loop. There are a couple of things you can do about this. One is to use opposite rudder at the end of the snap roll, which I do most of the time, and the other is to cheat a little, which I have also been known to do at times.

OPPOSITE RUDDER: Here's the technique for using opposite rudder. Once you release the

RC REPORT MAGAZINE

TEACH YOURSELF AEROBATICS CARD

LOOPS WITH SNAPS

By Ed Moorman

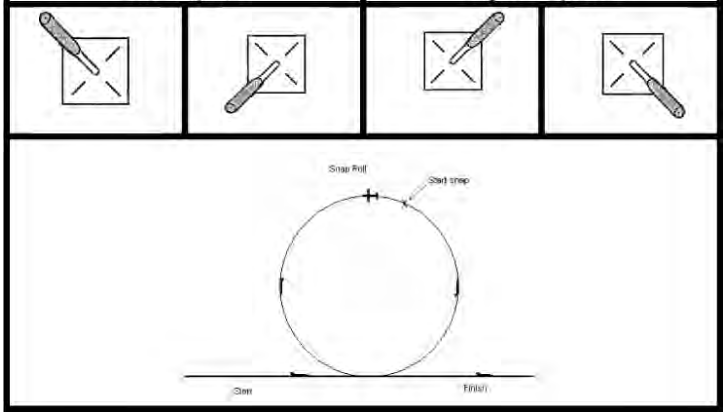
Avalanche: An inside loop with a snap at the top

Practice a snap roll from a climb first to get used to doing one at a slow speed. Once you can do one snap give the avalanche a try.
✓Step 1: Start from our Standard Set-Up like always. You remember, 1. Full power, 2. Parallel to the runway. 3. One mistake high.
✓Step 2: When you are in front of yourself, start a regular inside loop. No need for full up. We want a fairly good-sized loop, not the biggest your plane will do and not a real tight one.
✓Step 3: Just before you get to the top, hit snap roll controls. Check the R/C Report Maneuver Card for stick positions. Release the controls so you get one snap.
✓Step 4: Finish the loop

PROBLEMS: Your plane pulled off to one side during the snap roll.
✓When you release the controls to stop the snap, blip in some opposite rudder to pull the plane's nose back on track.
✓The other way to end up on line is to cheat and start off slightly in the opposite direction from the direction your plane will be pulled off. This way when your plane stops the snap, you'll be lined up to finish the loop

TRAINERS: Use FULL AILERON AND FULL RUDDER for the roll

Left Snap Roll		Right Snap Roll	



controls to stop the snap and they return back to center, put in some opposite rudder and release. This will pull the plane's nose back on track. Let's say you do your snap roll to the right. You enter right snap roll controls, release, then left rudder and release. I use about half rudder; depending on which plane I am flying. If you do your snap roll to the left, use right rudder for the correction. You shouldn't have to hold the rudder in; just give it a quick blip to get the nose back near the line of the loop.

CHEATING: The other way to end up on line is to cheat on the pull up. It is hard for most people to tell when the loop is a little off angle, so when you start the maneuver, make it off line slightly in the opposite direction from the direction your plane will be pulled off. This way when you stop the snap, you'll be nicely lined up to finish the loop.

Right snap roll: If you snap roll to the right, angle off to the left slightly on the pull up. Not much, just a little off.

Left snap roll: If you snap roll to the left, cheat off to the right a little. It works,

TRAINER AVALANCHE: Most trainers won't do a snap roll unless the controls are set to a fairly high rate. This may make the plane too hard to fly the rest of the time, especially if you don't have dual rates. If this is the case, try doing a regular aileron roll at the top of the loop instead of the snap roll. Since your airspeed is going to be slow up at the top of the loop, use FULL AILERON AND FULL RUDDER for the roll. You may have already found that this technique of using both aileron and rudder works well for doing rolls any time with a trainer.

Next month, I'll cover the outside loop with a snap roll, the blizzard!

PHOTOS

Photo1: Frank Maguire poses with his Executive Canard, scratch built from plans by Flaps Laffert. Saito .56 power.

Photo2: The underside of Frank's canard. It's due to be tested when the cold weather breaks.

Photo 1

Photo 2

Photo3: Ed's old Joss Stick from 9 years ago showing both ailerons up as spoilers. Magnum 1.08 power. We are still using that engine in a scale Northrop A-17.

Photo4: Ed's Goldberg Wild Stik 40 from 2 years ago. The picture was taken just after landing showing the spoilers in the up or deployed position. JBA .56 power.

BLIZZARD:
A reverse outside loop with an outside snap

✓Step 1: Start with the Standard Set-up.
1. Full power, 2. Parallel to the runway, 3. One mistake high.
✓Step 2: Before you pass in front of yourself, roll inverted and stabilize in inverted flight with a little down elevator
✓Step 3: Directly in front of yourself, push in some down elevator to start an outside loop. About half down elevator should be enough.
✓Step 4: Just before you get to the top of the outside loop, do an inverted snap roll. Do one inverted snap roll and release the controls. You may want to use opposite rudder to pull the plane back to the original loop track.
✓Step 5: Continue the outside loop and level off at the bottom.
✓Step 6: Roll back to upright level flight. That's it.

Trainers: This is a hard maneuver for planes with a flat bottom airfoil.

Left Inverted Snap Roll		Right Inverted Snap Roll	

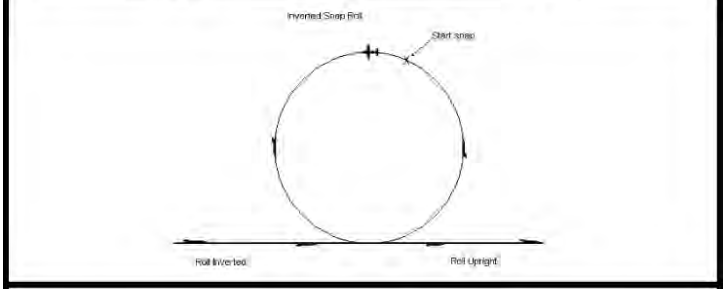


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Photo 3

FEATURE OF THE MONTH: Setting up your radio: Today, virtually all radios are computer radios that will allow you to store trims for 3 or more models. For this reason, you should follow some procedures when you install the radio and get a new airplane ready to test.

1. Go to the model number in the radio that you are going to use and do a RESET. Every computer radio has a reset function or something that will return all the settings to factory default. This is extremely important. If you don't do this, you may be surprised when you plane does something funny in the air. Even if the radio is brand new, a function may have been changed during a factory test; someone else may have looked at it in the hobby shop, played with the settings, then decided not to buy it. Always do a RESET.

2. Install your radio, the servos, battery, receiver and switch, but don't hook the controls up yet.

3. Turn on your radio and check the position of the servo arms. They should be square (90 degrees) to the servo case. If they aren't, remove the retaining screw and reposition the servo arm as close as possible to square. Then use the SUBTRIM function in your transmitter to set them correctly. The SUBTRIM is misnamed and should properly be called "CENTER ADJUST." To set the throttle servo arm, move the throttle stick to the middle, straight up. Note: Many transmitters have tick marks at the bottom of the sticks so you may center the stick up.

4. Hook up the pushrod to the elevator servo and elevator. Move the transmitter stick to test for the correct direction of movement. If the control moves in the incorrect direction, use the SERVO REVERSE function to correct. Adjust the clevis to set the elevator in neutral and install the keeper.

5. Do the same for the rudder servo. Note: If you are using a pull-pull setup, the holes you hook to on the servo arm and the rudder horns need to be spaced as closely to the same exact distance as possible to prevent binding the servo.

6. Hook up the throttle next. With the radio on and the throttle stick straight up, hook the pushrod to the servo arm. Open the carburetor half way and hook the pushrod to it. Go to full throttle and idle and check if the movement is correct.

   a) If the carburetor doesn't open all the way or close to idle, move the connector on the carburetor arm up closer to the center of the carburetor or move the connector further out on the servo arm.
   b) If the servo is giving too much movement and opens the carburetor fully before the stick is at full power, move the connector down or further out on the carburetor arm or move the connector in on the servo arm.
   c) Repeat the process until the carburetor opens and closes correctly.

7. Finally, plug in the aileron servos and set them. Be very careful to get the aileron servo or servos moving in the correct direction. Don't get in a rush and always stand behind the plane to check the aileron direction. Right stick, right aileron up, left, down. Left stick, left aileron up, right, down. Yes, I have bashed a new plane because of hurrying and getting them backwards.

a) If you are using two aileron servos, and many planes these days come with a dual aileron servo setup, use the same brand servos for best results. I have had jittering, failure to work and other difficulties from using mixed servos, especially on a Y-connector. A matched pair works best.

b) If your transmitter has a FLAPERON setting, this is your chance to try it out. Once you set flaperons, you need to plug your aileron servos into two different channels, the aileron channel and the flap channel. On my radio, I plug the right aileron servo into the aileron channel and the left aileron servo into the flap channel. Once you do this, everything works. Well, you do need to check the centering and direction of both ailerons individually.

   i. Move the aileron stick to the right and check the RIGHT aileron. Don't even look at the left one. If it's up, the right side is good. If not, reverse the aileron channel.

   ii. Move the aileron stick to the left and check the LEFT aileron. If it's up, fine. If not, reverse the flap channel.

   iii. Stand behind the plane and check both ailerons in both directions.

Flaperon Use: If you only use the FLAPERON function for dual aileron servos, this is just fine. Having the servos on two different channels means you can adjust the centers and travel independently. I like to do this on most all of my planes.

Flaperon Centering: This is an addendum to Steps 3 & 4. If you do decide to use flaperons. You need to center the flap channel just as you did for the other channels.

1. Your transmitter has either a flap knob or a flap switch. My older transmitters had flap knobs, but my present one had a 3-position flap switch. In either case, you need to set it to neutral. Turn the flap knob to the center position or flip the switch to the neutral position.
2. Use a little piece of tape or a marker to mark the servo in the left wing that is plugged into the flap channel. With both aileron servos plugged in, turn on the transmitter and receiver. Check the centering of both servos. Remember the left aileron servo that is plugged into the flap channel has its centering and end points adjusted with the flap channel settings.

Flaperons as Flaps: Since the aileron servos are plugged into two different channels, they may be lowered together and used as flaps, while still retaining their aileron function.

1. Flaperons used as landing flaps. You may use your flap knob or flap switch to lower the flaperons for additional lift or drag on landing. In case you were wondering, this does not take away from their aileron function. From a practical standpoint using flaperons as flaps adds a good bit of lift, but very little drag. The only problem I've ever had with using the flap knob is returning it to the exact neutral position. The knobs seem to only have a center

mark and not a center detent. Since I don't like to look away from the plane to see where the knob pointer is, I prefer a flap switch. I'll take only 2 or 3 positions, depending on the type switch, for the convenience of a sure thing neutral over the variability or a knob.

2. Flaperons as stunt flaps. Built into the FLAPERON function is the ability to have them move opposite to the elevator, increasing lift in maneuvers, just like the flaps on a control line stunt plane. Stunt flaps will let your plane do some very tight loops and turns. To set stunt flaps, go into the FLAPERON function and set the percentage.
    a) Hold full up elevator and set in a small percentage, try 25% at first. As you are holding full up elevator, the both ailerons should move down a small amount. If they move up, reverse the percentage setting.
    b) Release the elevator stick and the flaperons should return to neutral. Move the stick to up and back to center a few to see how the flaperons follow the elevator movement.
    c) Hold full down elevator and set in the same percentage in the opposite direction. With full down elevator, you should have up flaperons. This will give you tighter outside maneuvers.
    d) Flip your plane over and put in and hold full up. Look at both flaperons to see if they are traveling the same amount. If they aren't, you'll get a roll during maneuvers. While holding full up, note which flaperon travels the most. Remember you placed a small piece of tape or some other marking by the servo that plugs into the flap channel. Go into TRAVEL or END POINT adjustment and reduce the movement of the servo that moves the most.

1. Flaperons as spoilers or spoilerons. If you move both flaperons up instead of down, they reduce or spoil lift instead of increasing it. In this position, they are normally called spoilers or spoilerons to distinguish them from the downward flap movement. Spoilers work very well on trainers, Sticks and light weight sport and 3D planes. They actually make landings easier because they reduce the float you get near the runway. Spoilers are my favorite use of a mix. They work especially well on windy days and in cross winds.
    a) Note: Just because you dial both flaperons up a quarter inch does not mean your plane is going to fall out of the air. If your plane has ailerons that are an inch or an inch and a quarter wide like those on a trainer, spoilers, like flaps, are not very effective. They do work well on Sticks, fun fly and 3D planes. I normally set mine to about 20 degrees up.
    b) Use your flap knob or switch to try them out. If you like them you may want to mix them to throttle.

c) I have covered spoiler mixing in a previous column, so I won't go into great detail, but I will give a quick overview.
   i. Use one of your free mixes, sometimes called a "p mix."
   ii. Set throttle as master and flaps as slave.
   iii. With the throttle at idle set the percentage so the flaperons move up about 15 degrees. You can increase later, if desired.
   iv. Move the throttle forward and the spoilers should drop down into the normal aileron position.
   v. **SET A SWITCH TO ARM AND DISARM THE MIX.**
   vi. With your throttle stick at cruise or full power, nothing should happen if you arm the mix.
   vii. Reduce the power to idle and the spoilers rise up. The nose will rise a little, and then the combination of idle power and the spoilers should give you a slightly increased descent rate. Add power back and you're back to normal. This, in my opinion, is the beauty of spoilers mixed to throttle. If anything doesn't feel right, don't go feeling for a switch, just pop the power to it and you are cruising like normal. Then you can find the switch and disarm the spoilers.

(*Editor's note: Wow, can you say information overload this month? Just kidding there Ed!*)

Ed Moorman

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PropCuts!!

By Chris Handegard

Webster's dictionary defines the word COMBAT in these terms:

1.VERB, To struggle or contend, as with an opposing force; to fight.

2.NOUN, A fight; a contest of violence; a struggle for supremacy.

ORIGIN: French "combattre" from the Latin prefix "com," meaning with, together, in conjunction, very, and battuere, meaning to strike. (Hence, we have the term battery).

Okay, enough with the grammar lesson. Suffice it to say that when you are on the subject of combat, there is no question as to the very active, vigorous, and contentious nature of this concept by its very definition. Coupled with the application of Remote, or Radio Control, you get the terminology describing the most exciting five minutes in model aviation. You got it; we're on the topic of RC COMBAT!

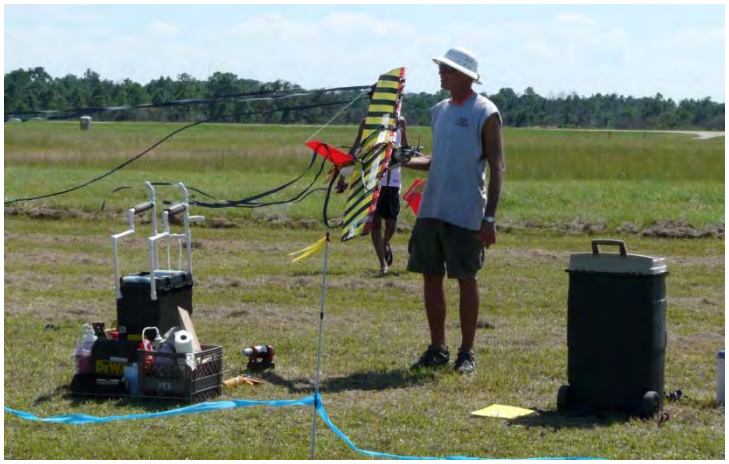

Photo 1: Yours truly after a round of Open B combat at the Indian River Kontrol Society IRKS Summer Slam Event in Melbourne, Fl. Oct. 2009.

This is my first article as a columnist for RC Report Online, so by way of introduction, perhaps a little qualifying autobiography is in order, so here goes. At an early age, there was no doubt about my fascination with anything that flies. From kites to simple balsa hand launched gliders, rubber powered, and finally built up rubber powered models of the renowned Guillows trademark, I recall many happy days building and test crashing anything that had the potential to at least temporarily defy gravity!

By age 20, Radio Control was still primitive by today's standards; but had been significantly improved upon since first becoming commercially available. Remember the 4-channel Kraft radio that sold for about $400? Been there, done that! That was right about the time "Pong" was considered a cutting edge video game, egad! (*I don't remember Pong. Did you ever play Pacman? Julia*) I built my first glow powered .30 size shoulder wing trainer and

proceeded to try learning how to fly it, without the benefit of qualified instruction.

Well, you can imagine how that went! Sure enough, despite miraculously taking off and landing twice without major mishap, on the third try it got away from me and performed the universally renowned and immediately recognizable Smokin' Hole Maneuver before I could remember which stick did what! Thank goodness no one was around to witness, and/or be dismembered by that comedy of errors! Sorry I don't have any digital pictures to offer from those days, which is a real shame because I had lots more hair then. (*Now where is the scanner when you really need it? Julia*)

Life took a few unexpected turns, and it wasn't until my mid-thirties that I returned to the hobby for another go 'round. This would be circa late '80s, early '90s and as you might expect; technology had made great strides in all directions benefitting our hobby by greatly improving the reliability and functional capability of the electronics in which we control our contraptions. This time I joined a club, got some instruction, and started to rack up the stick time. In those days, the trainer cord and buddy box were just coming into popular use, but had yet to be universally owned and used by all. I came up learning to pilot a model aircraft, the activity we loosely refer to as flying, the old fashioned way. If I got into trouble the instructor had to wrestle the box away from me in time to prevent a repeat of the Smokin' Hole Maneuver, hereafter referred to as the old SHM.

Once I got the hang of it, built a few different types of KITS, (Yes, I said the "K" word.), and racked up enough experience to move on; this combat thing came to my attention. ARFs were becoming more available with improving quality, but most of the flying models at the field still started life as a box of balsa crafted by the individual right here in the US of A. Ah, those were the good old days! No surprise then that the common design for combat here in South Florida was a cute little 36" span balsa critter by the name of "Wild Thing." Kitted, (There's that "K" word again.), by Quality Aircraft run by Gary Ballard, who by the way, was a great supporter of many things RC in particular combat. He donated, over the years, large quantities of kits for us to give away and competed himself as often as possible.

No sooner than a few of us put streamers on our Wild Things, and chased each other around than I realized that this was some off the hook fun! I went ahead full speed practicing whenever one of the other combat friendly types showed up with a plane. We all had streamers with us to be ready for action! In no time flat I had perfected the Snap Spin Crash maneuver, usually culminating in a SHM, (see Smokin' Hole Maneuver previously mentioned).

Back then there were several area clubs hosting Wild Thing combat contests and I went to my first one around ’93-’94. My home club soon developed a very active group of combat enthusiasts, so the next step was to start hosting our own competitions. The first “Wild Weekend” contest took place in West Palm Beach, Fl. during April of ’95, drawing some 35 or so entries from as far away as Wisconsin and Montana. The first prize was $1000 cash! Total cash prize payout for 1st through 3rd place was $1800! Trophy plaques went down to 10th place and the winner got his/her name inscribed on a perennial trophy cup that he/she was obliged to bring back the following year to put up for grabs again. The Palm Beach Aero Club kept this tradition going annually for seven years until, sadly, we lost our flying site and that, as they say, was that. During this time frame I continued to develop my interests in RC flying in general and combat in particular.

Photo 2: Perennial “Wild Weekend” Championship trophy, returned each year by the winner to be vied for anew.

New aircraft designs for Open (non-scale) combat, building materials and techniques, the introduction of 1/12th scale WWII fighter class combat, the thrill of getting right into the thick of it, and a trip to the AMA NATS in Muncie, Indiana, for the 2001 combat demonstration/contest, all served to spur on my interest. Competition at the national level is a bit more intense than at local events! The RCCA, RC Combat Association, still fairly new, did a great job organizing the event and the turnout was outstanding. Subsequently, the following year, combat was made officially part of the annual AMA nationals program.

Health and personal issues, in 2003, forced me to take a hiatus from flying for a couple of years. When I started feeling up to it again in 2005, naturally one of the first things on my agenda was getting back into RC Combat again. I was shocked at the changes that had taken place

Photo 3: 26 Pilots attending 2001 AMA NATS competing in Scale combat

during my leave of absence. New classes had emerged and some of the rules had changed a bit, but the worst thing to happen was that competitions seemed to have all but vanished from the whole state of Florida! I had to drive 10 hours each way to Georgia for the nearest combat contest!

Able to drive solo to the '05 NATS again for the first time in years, I was delighted to see some of my old friends in Muncie still keeping the combat fire burning and had a great time in spite of some freakish summer storms. At one point, we called it a day when tornado warnings were issued. On the drive home, being by myself, I had a lot of time to reflect and made a resolution to do something about the sorry state of affairs that combat had deteriorated to in the South Florida area.

Having assisted with events previously, I knew it was a bit of work; but well worth the result. I renewed my Contest Director status and put the idea of hosting combat competitions up to the two clubs near enough to me to call home fields. They both were agreeable and eager to do so. In the years from then until now, have hosted annual events that I will refer to and occasionally draw from to give you some idea of what combat in this area looks like at ground level.

I'll be presenting write-ups on events, building techniques, product reviews, interviews with combat pilots and event directors, tips and tricks, scale projects, how to segments, free advice, (Correct advice will also be available on a sliding scale fee schedule.), links to resources, what's hot and what's not, Be There Or Be Square, a monthly spotlight highlighting an upcoming event to put on your calendar, and lots more.

BE THERE OR BE SQUARE

For starters, I'd like to mention 2 events that by the time this article posts will be either over and done with or actually happening. The Corona RC Club in Corona, Ca., is hosting a competition for SSC (Slow Survivable Class) combat and Open B class on Saturday Feb. 6, 2010. At time of this writing there are a remarkable 18 pilots registered online to participate. While event turnout is shrinking in some areas, the west coast is showing all kinds of new growth. The numbers of contest entries and new RCCA memberships from the "other" Sunshine state are testimony to the growing combat community there and obvious result of years of effort put forth by guys like Terry Harner, Andy Erwin, Danny Bronstein, Glen Kratz, and Pete Sullivan, to name just a few. Very well done to all involved and participating out there, great job! Exactly one month later on March 6 the "Coachella Air Combat Alpha" contest for SSC and Open B takes place in Coachella, Ca. Be there or be square!

Now for my featured event in this month's BTOBS: The LONE STAR NATIONALS 2010 hosted by the Greater Southwest Fliers club of Ft. Worth Texas. Three full days of combat mayhem from Fri. March 26 through the 28, for 2548 Scale (WWII Fighters 48" wingspan), 3696 (smaller electric only warbirds), SSC, and Open B classes. The contest director and former RCCA president, Ed Kettler, has done a great deal over the years to keep combat going not only in his home state of Texas, a very big job in and of itself, but also nationwide by giving generously of his time and energies to bring changes. He, and many others, felt it in the best interest of combat in general and in particular, scale combat. Ed is passionate about WWII fighters and it shows in his enthusiasm for the realm fewer pilots have the courage to tread, Scale Combat!

The LONE STAR NATS are well worth a road trip and usually attended by top notch competitors such as Lee the "Knife" Liddle, Evan "Showtime" Wengler, Bob "Buttercup" Leone, all hailing from Texas, as well as the occasional appearance of Mike "Dr. Evil" Fredricks from Wisconsin and the Father-son dynamic duo from Tennessee; Alex and Tim Treneff. I was able to make the journey only once thus far, in 2007, but every year I mark it on my calendar and try to work it in, maybe this year. BE THERE OR BE SQUARE!

The events I refer to, and others, as well as where you go to sign up for contests is on the RCCA's website. Once I get things organized in my column, I should hope to make this an active link you can click on or paste into your browser: http://rccombat.net/events/event_Details.asp?idEvent=714

In my next column, I'll feature a close up look at my home-built CNC Foam cutter. One of these babies is the cat's meow when it comes to fabricating your own models out of white, blue or pink sheet foamboard. For this month, here's a shot of one of the designs to come from it, an F-82 Twin Mustang for 2548 scale combat spanning 60". The model is powered by 2 OS .15 CVA glow motors and weighs a hefty 5 lbs., which is actually a full pound over what is required; a condition that will be addressed in the next version. This plane has been used in a number of competitions among them the Lone Star NATS previously mentioned. It flies reasonably well, but at 5 lbs. is not quite able to keep up with a good running .25 powered single engine design.

Scale projects like this are not as hard to model as you might think, but there are a few steps to take before you get from concept to pieces cut and finally the fully assembled end product. Many of you interested in scale combat may have a favorite type of WWII fighter you would like to use in competition. One of the great things about scale combat is the wide variety of designs to choose from that have already been proven in actual aerial combat. The challenge is simply to scale it down and construct it from readily available materials that are fairly cheap and resilient when put through the rigors of RC Combat.

Photo 4: F-82 Twin Mustang 60" wing span for 2548 Scale Combat

In past years many were willing to scratch build nicely done versions of their preferred fighters from traditional balsa and light ply as most model aircraft were constructed. The finished results were generally very nice to look at and flew extremely well, being quite light. What we all discovered sooner or later is that any kind of collision, even minor, something that can occur at any time during a round of combat, could easily disintegrate our pride and joy. Sadly, some people may have become discouraged by this fact, and quit combat or at least the scale type.

Now the predominant materials used are high density blue or pink foamboard for the fuselage and wings, corrugated plastic (cloroplast) signboard for the tail surfaces, and a little lite ply for things like the firewall. We'll get into some close up construction articles that detail what seems to be working well for everyone. For starters pick something, perhaps a bit off the beaten path in the

way of a fighter you might like to build and search up a three-view drawing to work from. Here's one of a lesser know Japanese twin engine fighter called the "Gekko". I intend to cut a combat kit for the popular 2548 class based on this detail, and I'll share my progress with you.

Scale combat is by far, in my humble opinion, the more attractive class insofar as little models that resemble actual fighter planes do lend a distinct quality of realism to the spectacle, and when well built, they certainly have more pizzazz on static display than their non-scale counterparts. Yep, we're talking eye candy here. We'll be getting into discussions on the different classes; there are two in current sanctioned competition, in later issues. Well, I'll be discussing and you will hopefully be reading! Please send your questions and comments in by e-mail and let me hear from you!

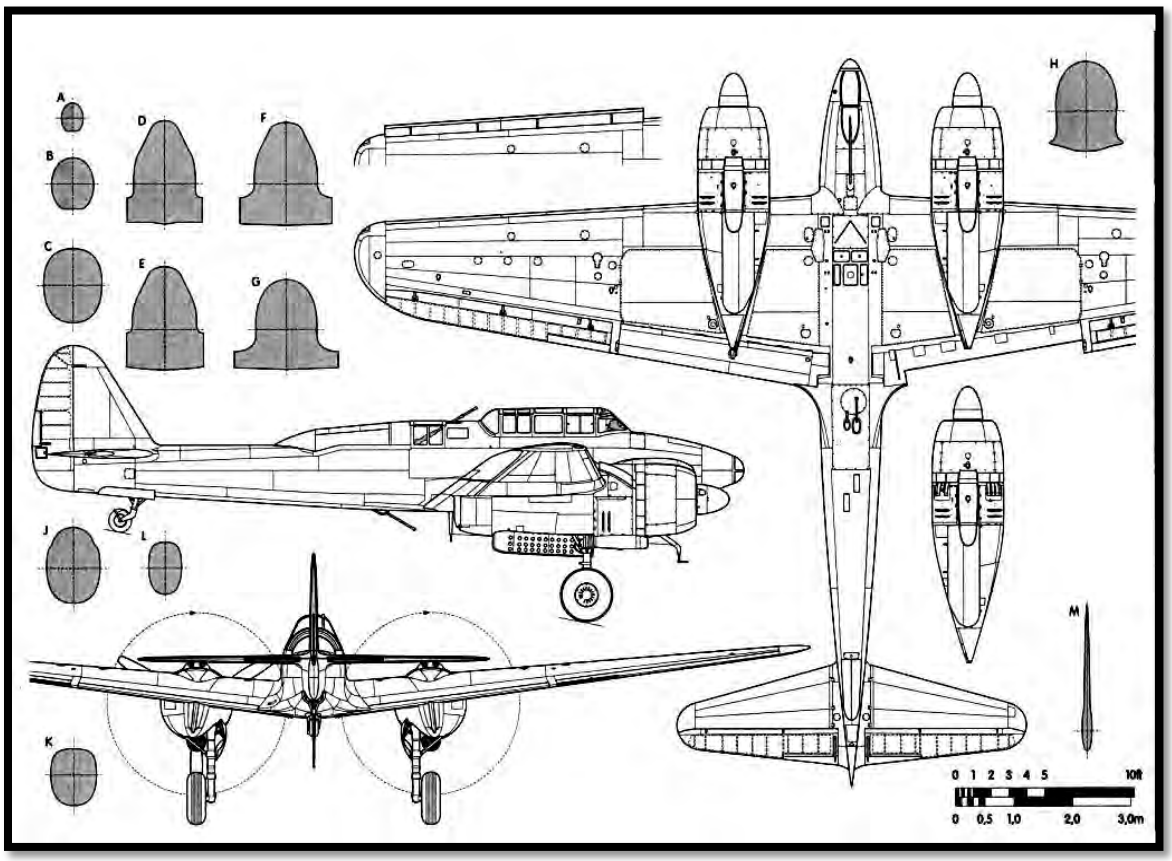

Photo 5 Japanese "Gekko" three-view diagram

HOW TO

My tip for this month is a pretty straightforward airplane storage system that uses off the shelf (no pun intended) adjustable rail mount shelf brackets. You may have used them for the intended purpose, but I find they do a good job of racking planes of just about any size short of giant scale in a way that keeps them tight to the wall and can be changed easily when you need to modify for different configurations.

It consists simply of the economy style wall mounted rails with pre-punched slots and the shelf supports that clip into them. You can over kill it with the double slotted heavy duty style, but I use the single slot style and the support that is made from a single flat piece of metal which one clips into the rail. The supports come in various lengths; 12" to 18" is what I use for up to .90 size models and all my fully assembled combat planes.

To cushion the metal and prevent it damaging the airplane I use home improvement store foam tubing used to insulate air conditioner copper pipes. It is about 2" OD with about a 1" inner hole

Photo 6: Wall mounted storage system.

and comes in 6-8' lengths. It's very flexible, easily cut with scissors and usually has a pre-formed partial split along the entire length if you want to split it around something. I cut the tubing to length and slide it on the supports without splitting it.

Well, that's it for this month gang! I hope you enjoyed it, and I am looking forward to hearing your comments. Don't forget to clear your guns before you engage and check your six o'clock frequently! *(I didn't know what this meant until I had watched a few episodes of NCIS! Julia*)

Chris Handegard

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Tails from the Other Side

By Isabelle

It's March already, huh? Here I am writing my third column and no one has actually bashed me or my column, and at least some of you are reading it. Well, you are looking for smileys in it. Does that count? At any rate, I'm having fun so far! Mom, on the other hand, tells me that having yet one more responsibility is rather taxing. I'll just slip some green food coloring into a beer for her and she'll think she's back in Savannah for St. Patrick's Day. Speaking of such fun; I looked for an event in that area for that particular time of the month and NOTHING! You know why? 'Cause the good Irish people of Savannah are celebrating down by the river! Join them! Just don't forget to take advantage of all the events I shared with you all last month!
Insert photo 1.

I am going to jump to April for just a minute, (Then we will hop into my DeLorean and head back to March. Who remembers that movie? Or the cool car?) by sharing something with you that was sent to me by my fellow columnist, Gary Webb.

Doolittle Raiders Last Reunion
I was at the Airpower Museum in Urbana, Ohio on, January16, 2010, at a meeting of our friends of flight group that encompasses four area RC model clubs. The museum has a flying B-25, B-26, DC-3, Petinpol Auto Gyro, T-6 Texan, a replica of the Wright B Flyer and a Nieuport 27 built and flown by a fellow RC modeler.

The Museum manger and head of maintenance, Chris Patten, informed us that the Doolittle

Raiders, famous for their daring bombing raid against Tokyo Japan during WWII, were going to have their last reunion at the National Museum of the United Sates Air Force at Dayton, Ohio. The Doolittle Raiders have held an annual reunion almost every year since the late 1940's. The high point of each reunion is a solemn, private ceremony in which the surviving Raiders perform a roll call, and then toast their fellow Raiders who passed away during the previous year. Specially-engraved silver goblets, one for each of the 80 Raiders, are used for this toast. The goblets of those who have died are inverted. When only two Raiders remain alive, they will drink a final toast using the vintage 1896 bottle of Hennessy cognac which has accompanied the goblets to each Raider reunion since 1960. The vintage was chosen because it was the year of Jimmy Doolittle's birth. The bottle of cognac and the goblets have been maintained by the United States Air Force Academy and on display in Arnold Hall, the cadet social center. On 19 April 2006, the memorabilia were transferred to the

National Museum of the United States Air Force. The town of Urbana, Ohio, more specific, the Grimes Airport, will be the staging area for 25 B-25s who will be attending the reunion in their honor. This will be the first time since WWII that this many B-25s will be in the same place at the same time. Grimes is a small airport per say and the public is welcome to witness this event. The B-25s will start arriving Thursday, April 15, and they will then take off and form up to fly to the Air Force Museum and land on the historical runway behind the museum to honor the Raiders. This will be a once in a life time opportunity to see this many B-25s ever assembled. One of them is based at Grimes Field and is flown regularly. They are also restoring a B-17G on premises that the public is welcome to view and talk to the men restoring it.

The reunion will be held April 16-18, 2010. The B-25s will be landing behind the National Museum of the United States Air Force on the museum's runway. There will be a FREE public autograph session, educational event, and memorial service honoring the Doolittle Raiders. There will also be a dinner in the Modern Flight Hanger (for a charge) and also a public concert honoring the Raiders at the Wright State University Nutter Center that seats approximately 12,000. The Nutter Center is about three miles from the museum. There are nine surviving members of the Doolittle Raiders of which five can travel and plan on being there as of now. The Doolittle Tokyo Raiders Association is responsible for arranging to have the B-25s present and looking for financial help to make this possible. It will be the largest gathering of B-25s since WWII, I'm told. If anyone can help, please contact Mr. Tom Casey at either 941-921-7361, or tomcat911@comcast.net.

Now, back to March and a few more items to add to your calendar:

The first weekend of March has a lot to offer! You may be forced to make some tough decisions are on where to travel. Dad will be in Perry, Georgia, for the Southeastern Model Show, so say hello if you see him.

My money is on this event, if I could travel: Midnight Madness at the DOME E-NITER. At 12 midnight, 12 FREE Li-Po's to 12 Pilots! Six hours of heated, indoor, electric flying inside Illinois' biggest golf dome! Entry fee includes pizza snack for all at midnight; coffee & soda all night. AMA only. If I recall, Mom was invited to this event and where she goes; I go. Maybe next year. Pilots must have their card & pay $15 fee. All spectators pay a $5.00 fee. Contact Stan Warden, 630-654-8476(H), 630-470-0556(C) or frenchstan@att.net. For even more vendor and event info, see DomeE-Niter.com, or www.SuburbanRCBarnstormers.com. Doors to the Dome open at 10:55 PM, and access to the pit areas begin at 11:00 PM. 11:00 PM Sat to 5:00 AM Sun for RC electric airplanes & small (28" maximum dia.) heli's. White Pines Golf Dome, 500 Jefferson Avenue, Bensenville, IL, 60106, is located west of O'Hare airport.

Or this one: the Model Aviators of S. Arkansas are holding their 9th annual indoor swap meet on Saturday, March 6, 2010, open 9 AM to 4 PM for the public. *Admission $5 (women and children under 12 free) *Tables $10 each (set up for vendors: 8:00am) *Non-smoking facility with heat/air and restrooms *Raffle drawings (concession stand on site) *Open to sell new and used RC products *All clubs, dealers and the public invited!!! *Come to buy, sell, swap, TRADE and fellowship. Call Jason @ 870-862-1533 or e-mail jcunningham50@hotmail.com

On Sunday, March 7, 2010, from 9AM until 1PM, visit the good folks of Swartz, Michigan. The Flying Aces RC Club is hosting their 19th Annual Swap Meet. Visit www.rcflyingaces.com for detailed directions. Contact Bill Gerald at 810-655-6420 for more information.

Moving on, the One Eighth Air Force is holding its 35th annual spring fly-in on March 13 & 14, 2010, at Superstition Air Park in Mesa, Arizona. The OEAF was formed 35 years ago to promote scale radio model building and flying. Although based in Phoenix, Arizona, members are from all over the United States. The fly-in is held twice a year; October and March. Generally about 80 pilots are in attendance and over one hundred scale aircraft. Last October the meet had 91 pilots and at least 145 beautiful scale airplanes. At the noon break on Saturday and Sunday the aircraft are lined up on the center line of the runway and let the public have a close up look at the planes. They are encouraged to vote for people's choice. After the runway is cleared, a buddy box opportunity is offered for any "kids", regardless of age, that want to try their hand at flying a radio controlled airplane. Although this is not a formal competition, around 2 or 3PM on Sunday, awards are presented. These include: Commander's choice, People's choice, Best civilian flight, Best military flight and many others. Raffles are held, too! There is also the famous OEAF PX with many items for sale such as T-shirts, coffee mugs, belt buckles, etc.

That same weekend, the 2010 RC SWAP MEET hosted by Johnson County Radio Control Flyers Inc. will be held on Saturday, March 13, 9:00AM – 1:00PM at the Bartholomew County 4-H Fair grounds' Family Arts Building in Columbus, Indiana. Vendor set-up starts at 8:00AM. Doors open to public at 9AM. General admission $3. Kids 12 and under free. Don't stop for breakfast! The kitchen will be open for breakfast and lunch! 100+ tables available. Tables are $10 in advance/$13 at door. To reserve tables call Denny Runge at (317) 736-0590 or drunge96@comcast.net or cell (317) 840-4158. Door prize and 50/50 raffle tickets available at door. Please keep in mind we will have two fly-ins later this year. You're welcome to fly at the local field after swap meet. Visit www.jcrcf.net.

Over on the east coast, on March 13, 2010, from 8AM until 8PM, you have the opportunity to visit Virginia's largest little airplane show! Open indoor flying all day and special demonstrations throughout the day. Check out the swap meet for the "deals of the century"! Visit www.fcrcfc.org for more information.

Don't miss the 10th Annual Giant Scale Aerobatic Competition held on March 13&14, 2010. Giant Airplanes: Flying continues all day. Saturday 9:00AM-4:00PM and Sunday 9:00AM-2:00PM. Contact Paul Cormier 941-416-2615 or Bob Shapiro 941-232-8188 for more information. Open to Public. $3.00 Parking Donation.

Lots happening that weekend! I'll let you decide where to go, depending on where you live and how far you want to travel. It's the beginning of spring break here that week. Call me if you need a travel companion.

The 16th Annual Central Alabama Helicopter Fly-In will be held on March 19-21, 2010, at 7477 Dickey Spring Road, Bessemer, AL. Camping on site; NO Hookups. Landing Fee $20.00. ALL NOVICES COME AND BRING YOUR HELIS AND GET SOME EXPERT HELP! Setup areas available for new pilots and novice pilots. This is the 16th Anniversary, please come and help celebrate. This is just a casual event where the emphasis is on having fun and enjoying the camaraderie of other helicopter pilots. AMA Sanction 10-0158. AMA card required to fly. For more information contact David Harkey at 205-329-8031 or dharkey55@bellsouth.net.

EPRC presents the Sun City Shoot Out on March 20 & 21, 2010! The El Paso Radio Controllers are pleased to announce the return of IMAC Competition to El Paso, Texas. This year's contest will be held at the clubs new RC Park. Patriot Field is located in North East El Paso, TX, at 6121 Stan Roberts Rd. IMAC Rules will be enforced in all classes including Freestyle by utilizing Zoneless Box Rules. Saturday Schedule: Registration: 8:00AM, Pilot Meeting: 8:30AM, Contest Begins: 9:00AM, Sunday Schedule: Pilot Meeting: 8:00AM, Unknown Rounds Begin 9:00AM, Awards after All Events Swap Meet: $10.00 Table Fee for Both Days. Visit www.eprcflyers.com for more information. AMA MEMBERSHIP REQUIRED. PILOTS: Lunch on Saturday included, Overnight Camping (Sorry No Hookups), Trailers may be left overnight at field. Entry Fee: $40.00. For Early Registration & Information contact: Ross Jackson at 502 417- 1252 or rossjackson@earthlink.net. Raffles for Pilots & Spectators. Food & Drink available both days. Note: Bring a chair as seating is limited.

Triad Aeromodelers SWAP MEET will be held on Saturday, March 20, 2010, at the Davidson County Fair Grounds, Fairground Road, Lexington, NC, from 8:00AM to 1:00PM. Vendors admitted Friday from 5:30-9:00PM and Saturday at 7:00AM. $5.00 Admission (Wives and kids free). Table Rental $12.00 / $15.00 (Wall). Rentals include 1 free admission per vendor. DOOR PRIZES, RAFFLE, FOOD AND DRINKS. Table reservations or questions e-mail triadswapmeet@yahoo.com
or contact Tom @ 336-764-2616.

Whew! Let's talk April, shall we?

SSWWAAPP TTIILL'' YYOOUU DDRROOPP 22001100 Radio Control Swap Meet, Sponsored by Suburban RC Barnstormers Inc will be held on April 3, 2010, from 8:00AM thru 12:00PM. Table Set Up and Check In at 7:15AM and General Admission at 8:00AM. Planes – Boats – Cars – Helicopters – and More. Held at the DuPage County Fair Grounds, 2015 West Manchester Lane, Wheaton, IL. Tables $17 pre-registered/$15 (3) or more - $20 at the door . One Adult admission with each table. Admission Adults $5 - Children under 12 Free. Coffee – Donuts – Pop Available. For Info Call: Debbie or John Howe – (630) 541-3054. Mail Table Reservations to: 6204 Stable Road, Woodridge, IL 60517. Email: RcWife2@comcast.net.

Warbirds over Bama will be held on April 9, 10 & 11, 2010. Visit the West Alabama Aero Modelers Field and join in the excitement!! See Giant Scale model war planes from WWI, WWII, and later fly. Flying Starts around 10:00 AM each day and will go on until dusk. Expected planes include Mustangs, Thunderbolts, P-40's, B-25's and more. Don't miss this 4th Annual event in Tuscaloosa!! Food and drinks will be available at the field Saturday and Sunday. Overnight camping is okay with prior permission. The field is located at: 6655 Watermelon Road, Tuscaloosa, AL. For more information visit our website at www.waam.us or contact Frank Baity at 205-553-7131 or Frank@ronlund.com.

Visit the Cedar Creek Aero Modelers on April 10, 2010 for their Annual Spring Fun Fly and Swap Meet, from 8:00AM until 4:00PM. These guys call the Circle R Ranch, just south of Malakoff, Texas, their home field. Bring your own tables for the swap meet. A landing fee of $20.00 includes lunch and a free raffle ticket and swap meet privileges. Location 32.1376N, 95.9696W

IMAC North Central Judging and Flying Seminar will be held on April 16, 17 & 18, 2010, in Muncie, Indiana at the AMA International Modeling Center. Mark your calendars now.

Plan on a very informative and fun weekend. A three ring binder with the Flying and Judging Guide will be available for all participants who have not received one at a previous judging seminar. You will also be provided with other Powerpoint presentation materials and lunch on Saturday. Registration deadline is April 9, 2010. Please contact Marian Berninger for more information at marianberninger@yahoo.com or 513-470-1652.

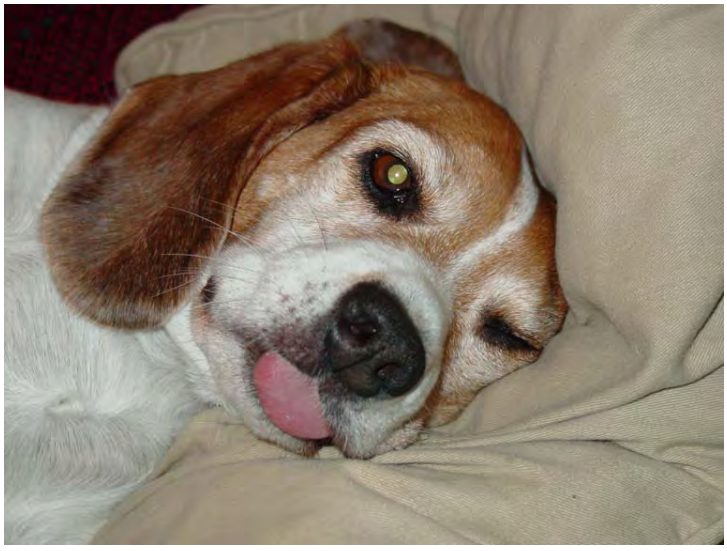
PROP NUTS R. C. CLUB in CROSBY, TEXAS proudly announces their FLEA MARKET_AND FLY-IN on APRIL 17-18, 2010. Big or Small– Bring Them All! AMA Sanctioned, Current AMA Membership Required. AMA Safety Rules Strictly Enforced. Safety Inspection Will be Performed before Flying. EVERYONE IS WELCOME (NO CHARGE FOR SPECTATORS). Bring your Lawn Chairs. CAMPSITES AVAILABLE (SORRY, NO HOOK-UPS). $10.00 Landing Fee, $5.00 Fee to Sell or Trade Merchandise. Bring your own tables and /or tents. Vendor set-up: 8:00AM. Open to public: 9:00AM – Dark. PILOT REGISTRATION FLYING. Fly over 600 acre grass farm! GREAT CONCESSION STAND!! GO☺D FOOD!! COME HUNGRY!! OPEN BOTH DAYS FOR LUNCH! For more information visit: www.propnuts.com or contact Tas Crowson at (281) 474-9531 or tcrowson@flash.net.

Air Fair 2010 will be held on April 24 & 25, 2010, at SRQ Club Field, Sarasota, FL.
Registration 8:00AM, with flying 9:00AM – 2:00PM, both Saturday and Sunday.
100 x 500 foot paved runway - Food Concessions on Site, Landing Fee: $10 for one or two days. I*MAA legal aircraft must be Eighty (80) inches for monoplanes and sixty (60) inches for multi-wing aircraft. Turbine or Ducted Fan aircraft must be one hundred forty (140) inches combined length and span!* Raffle drawing on Sunday. *Need not be present to win.* Pilot Parking Close to Pit Area - RV Parking (no hook ups). Visitor Parking by Sarasota Military Academy, donations accepted. Aircraft Related Vendor Display Area ($30 fee for both days). Contact Mike Winter at 941-966-7786 or mikeandeva@comcast.net. Visit www.sarasotarc.com.

That same weekend, April 24 & 25, 2010, join the Tri-County Barnstormers for their 26th Annual Big Bird, at the club field located at 916 Tafelski Road, New Waverly, Texas. Twenty-six years! Wow! You know it's going to be good fun! After all that time, they must do it in their sleep! For more information visit www.tri-countybarnstormers.com or call 936-856-3192.

Stay busy and stay out there in the hobby!
If you have an event that you would like for me to promote, please send me an email with the information and attach a flyer, too! Take a look at the flyers in this issue, too! Like I didn't give you enough ideas already.

Now on to the Pet of the Month…Again, this month, a winner was selected by random drawing. Congratulations to RC Report Online's March 2010 Pet of the Month, Peebles, from Mesa, Arizona. Peebles' dad writes:



Allow me to introduce Pebbles. She is a Beagle and about 10 years old, at least. Her turn-ons are Milk Bone treats, and long walks on the sidewalk. Her turn- offs are an empty treat box, and when her humans are too tired to take her for a walk. Pebbles is happy with the human family she lives with, at least it seems like it since she lets us keep hanging around her.
It was hard only picking the three pictures out of the thousand or so we have.

Thanks for your consideration,
Bill Adams
Bill and Peebles will receive a free premium subscription for one year to RC Report Online, which can be used as a gift or as a renewal; AND a $20 Petco gift card.

Many thanks, again, to all that entered this month! Entries received this month will automatically be included in next month's drawing, but I am always looking for new faces and friends!

How do you enter?

Just submit a picture of your pet or pets, including their name, approximate age and a brief description, with or without one of your planes for a chance to win a toy from my "Toy Box"!
All types of pets are eligible: with fins, fur, feathers, scales, farm animals, etc. Just so you know; Mom loves cows! And you know what? I'm just a little spoiled, so I have some great toys to share! Toys are selected randomly and may be anything from a toy for your pet or a toy for you! Each month a pet will be selected from all entries received by the 15th of the current month. Entries received this month will have the chance to be selected as RC Report Online April Pet of the Month. If you have more than one pet, you can enter multiple pets each month. You can email your picture (preferred method) or you can mail it by regular mail. Only photos received with a self-addressed stamped envelope will be returned. Please send entries to Mom at juliac@rcreport.net. Please put "Pet of the Month" in the subject line and make sure that you receive a confirmation email verifying that I received your entry. Even computers make mistakes and I would not want your pet to miss out just because of a computer error. I would certainly appreciate other correspondence as well, such as funny or heartwarming stories about your pets or anything else you would like to share. Birthday shout outs are welcome, too!

One last thing, just like Here's How by Walt Wilson, this column will depend on input from all of you. So send in your pictures and event details to me and your ideas to Walt!

Well, until next month,
Isabelle

Sparky's Revolt

by Tony Coberly

Wow! This year is flying by like a bullet greased with lard shot, from a rail gun!! I am getting ready for the Southeast Model Show in Perry, Ga. http://www.gamarc.com/georgia.html I will be there at tables W1-W4 in the McGill building, so stop by. I was looking around my shop straightening up and packing and I found something I forgot about. I attended a swap meet here in Huntsville in January of 2008. I purchased a Bullit flying wing from Hobby Lobby. I have always loved flying wing aircraft, so I picked up this one at the swap meet, even though it was already started. Since the Bullit is not readily available right now, I will go through the build and electric conversion process, and look at the different power systems we can use.

First thing is the size of the Bullit. It has wing span of 33 inches and a wing cord of 22.5 inches. The Bullit is designed for a glow power system up to .32. It is a bit smaller that my other flying wing, the Outlaw from Extreme Flight. The power system I chose in the Outlaw is far from efficient or optimal, but it is what I had on hand. The Outlaw is setup to handle up to 12 cells, and has wattage up around 2000. The Outlaw is crazy fast, but crazy heavy too! I want to keep things a little more on the level and easy with the Bullit, so I first look at the expected weight of the Bullit. OOPS! I forgot to mention that I have no instructions to go by!!

I am going to use two Futaba 9650 digital mini servos for the elevons. The Futaba 9650 has a torque specification of 50 oz-in @ 4.8 volts. I use these servos a lot because they have plenty of power and only weigh .9 oz. So that's about 2 oz. for servos, my E-flite 60 Amp ESC weighs in at 2.3 oz. and finally my Futaba 7-Channel FASST receiver is only .35 oz. With the airframe weighing in at 21 oz., we have a total expected weight without battery or motor of about 26 oz. Here is where I am going to change gears for a minute.

We have starting point, but I want this model to fly fast. If we consider the accepted rule that 50 watts per pound is good for glider/trainer like performance, 100 watts per pound for sport performance and 150 watts per pound for extreme performance; then let's apply this to the model if we added a power system that weighs 8 oz. Now our model weighs 34oz. or 2.125 pounds. Glider performance we need 2.125x50=106.25 watts to fly this plane. In theory, that might work; but we are looking for speed, not a glider. Sport plane performance would give us 2.125x100=212.50 watts. This is getting there, but like I said speed is the idea here. Extreme performance is 2.125x150=318.75 watts. Now these are very early numbers, but a baseline. Currently, we are assuming a weight for our power system to be 8 oz. This system could be up to a 16 ounce power system if we chose to use it. Let's look at something that several folks do not look into until the planes is built. Wing loading!

Because we can probably make this plane weigh between 34 and 50 ounces based on power system, we need to know the wing area so we

know what to expect. The wing area computes out to be 371 sq. in. Now we apply a few more generally accepted rules. Wing loading for glider flying characteristics is about 10 oz/sq.ft. Trainer like flying will need to be 15 oz/sq.ft. Sport plane loadings are usually about 20 oz/sq.ft. Scale planes tend to have wing loadings of 30 oz/sq.ft or better. So let's apply the theoretical weights we looked at earlier. 371/144=2.57 sq.ft wing area. 34 oz. / 2.57sq.ft=13.22 oz/sq. ft. Okay, so let's look at something more like 50 oz. total weight and calculate it out. 50oz./2.57sq.ft=19.45 oz./sq.ft. We now have a wing loading range of 13.2 oz./sq. ft to 19.45 oz./sq.ft to figure our power system. Now back to original overall weight figure of 34 oz. This would be a very light aircraft, but with only 8 ounces to work with, you would be limited to a battery in the 4-5 ounce range and the same weight range for the motor. Remember in the weights we used earlier I already figured in a 60 Amp ESC, so it's not a concern right now. Let's look at general weights for some motor and battery sizes. Generally an electric motor equivalent to a .15 size glow engine would be something like an E-Flite power 15, or the Rimfire .15 35-36-1200. The E-Flite Power 15 weighs in at 5.4 oz. and the Rimfire .15 weighs 3.6 oz. Let's look at a four cell LiPo pack for the motors described. The average generic four cell LiPo in the 25☺0 mAh range weighs in at about nine ounces. So, if we have about a nine ounce battery coupled with a motor that weighs about four ounces on average, we have a power system weight of 13 ounces. Wing loading calculations from earlier showed that a power system up to 16 ounces would still provide us with a wing loading of 19.45 oz./sq.ft. A wing loading under 20 oz./sq.ft is very lightweight and easy to hand launch, so we are in the ballpark. This leaves us with several options and allows us room to add a bit more weight to make as much power as possible! Remember earlier that I mentioned that I want speed!

Now I am going to shoot for a maximum weight in the area of 50 ounces ready to fly, with the most power I can muster! I have two five cell LiPo packs in my arsenal, so that's what I'll plan to use, one pack per flight. My Hyperion 5-cell 4000mAh LiPo packs weigh in at 18 ounces. So I need a motor that weighs no more than six ounces to be at our maximum of 50 ounces ready to fly. Using five cells, I am shooting for a RPM at or near near 14000 with an APC prop in the 10x7 or 10x8 range. This will result in thrust numbers of nearly 90 ounces of grunt!! Remember that I am looking at about a 50 oz. ready to fly plane! This means nearly two to one power to weight ratio! So if we are using a five cells LiPo, that means we have a full charge voltage of 21 volts. We can assume that under a load of a prop at full throttle we will have about 19.5 volts. So 140000RPM /19.5 volts = 717kV. Now a higher kV means faster, but also more heat! This is just a jumping off point, but at least we are not just guessing.

I always first look in my file cabinet to see what I have in the shop before heading out to the local hobby shop in Huntsville. I didn't really expect to find what I wanted, but I did find something very close. I found an ElectriFly Rimfire 45-50-800 that weighs about 7 ounces. This motor is considered a .32-.46 size glow equivalent motor and is capable of sustained current of 925 watts and bursts to 1480 watts! Now the motor is 800 kV, so that means we can

assume that our RPM will be a bit higher thatn we initially calculated, but it is very close to what we calculated. A slightly higher kV will yield a bit more RPM, and of course more current and heat, so we will have to do some real world testing to see what we actually have. I expect that a 10x7 APC will still pull very well. Let's give it a try!

The Bullit needs a few modifications to accept the power system that we talked about, so I started in the belly of the beast. I have heard of times that while pulling to vertical at high speed, the center of the wing in planes like this have simply failed and the battery has left the plane through the bottom! I placed a layer of fiberglass on the bottom of the belly and wrapped it up the sides slightly to reinforce this area. Just some epoxy or even thin CA glue will allow a great deal of additional strength. Once the glue dried, I fit my battery in the belly and found out very quickly that my receiver, speed controller and battery will not all fit comfortably in this space. I decided to just move my receiver back behind the battery in line with the servos. I just need to cut out a small access hatch to fit the receiver into. Now I have a bit of additional room for the speed controller and battery.

Now I have to consider cooling! This baby needs some place for air to escape, so out came the Dremel! Now I didn't get very picky here, I just opened a hole in the bottom rear of the cavity, and an additional hole in the top hatch. (Photo 1) One final hole behind the speed controller that opens up into the hand launch holes to make sure the rear of the speed controller gets some cooling as well. Moving forward we can now mount the motor!

The Rimfire 42-50-800 has a mount on the rear that requires about one inch of spacing to allow the prop to clear the front of the fuselage. I used nylon spacers from local hobby shop for a perfect fit. Simple 4/40 blind nuts are marked, drilled and installed. Now for the important part: More Cooling!

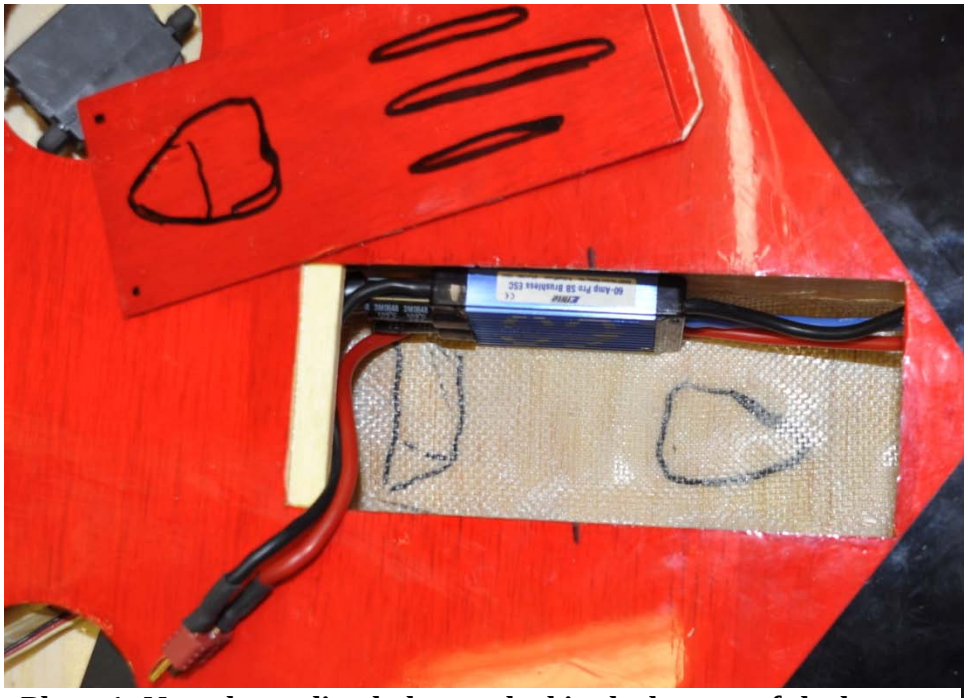


Photo 1: Note the cooling holes marked in the bottom of the battery tray and on the hatch cover. Just quick and dirty with a felt marker!

I already opened up exit holes for the air entering the fuselage, but the single hole up front will just not cut the mustard! I drilled four more holes evenly spaced between the blind nuts, but not too close, to allow more air in! (Photo 2) Now we can mount the motor and start tiding everything up! I decided to keep cooling at a maximum by not putting my motor wires through and out of the holes in the firewall, but rather run the wires to the speed controller

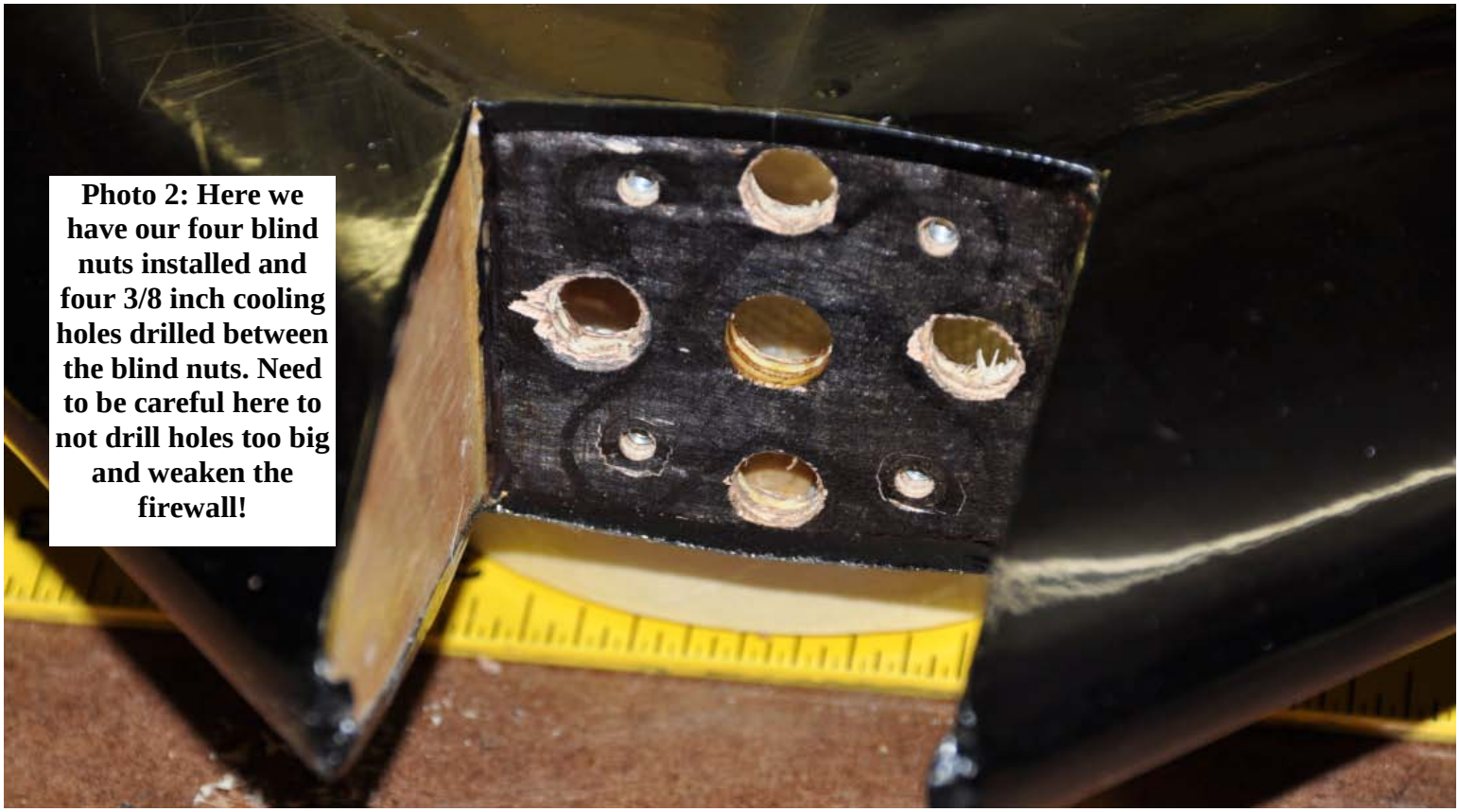
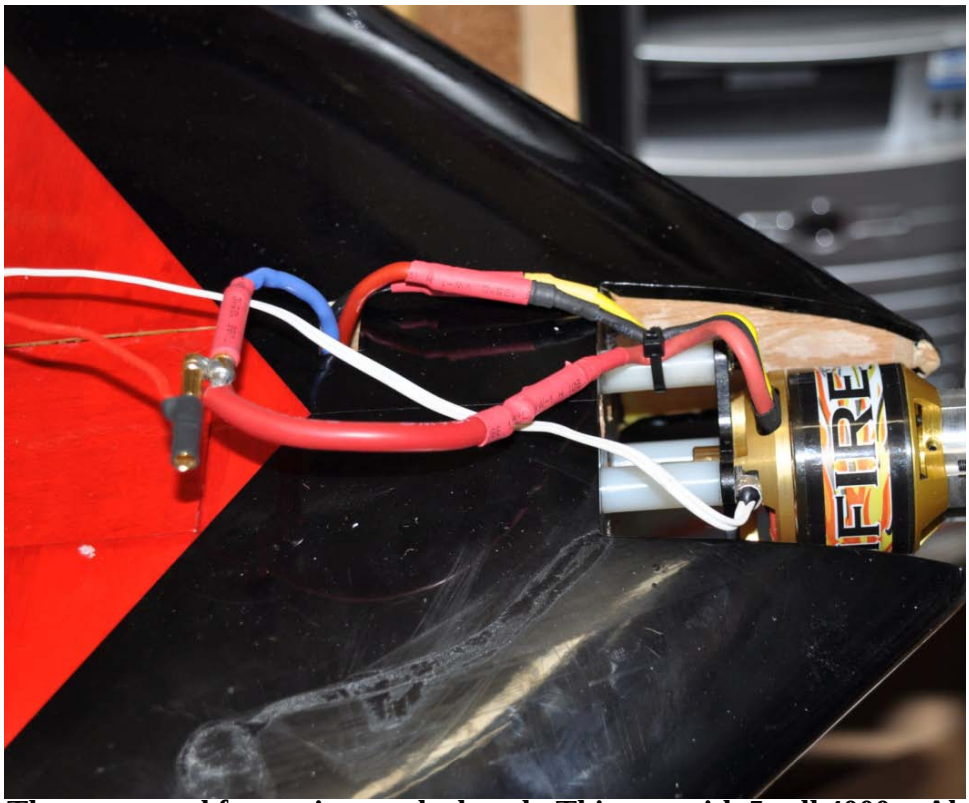


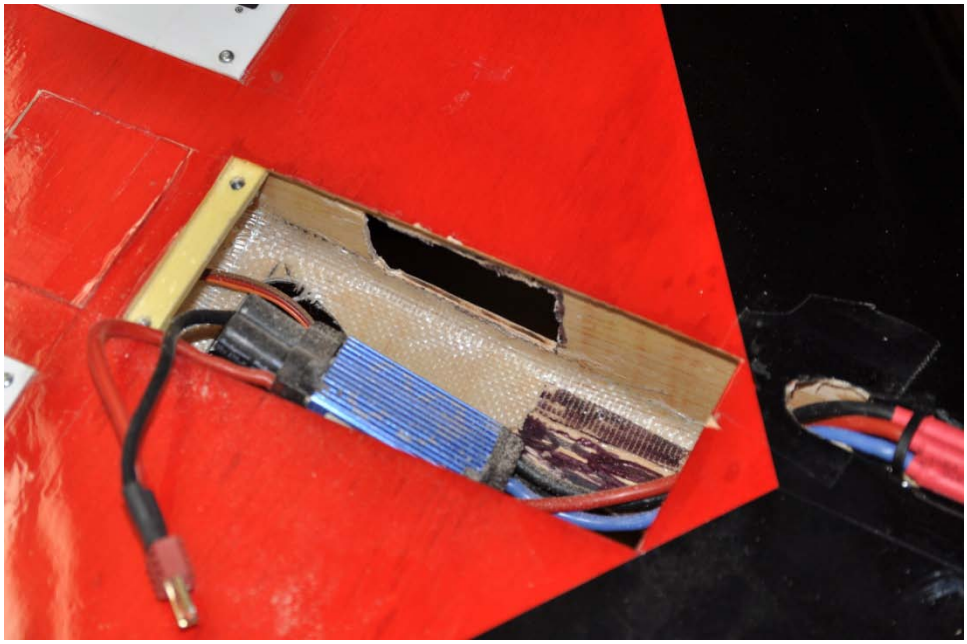
Photo 2: Here we have our four blind nuts installed and four 3/8 inch cooling holes drilled between the blind nuts. Need to be careful here to not drill holes too big and weaken the firewall!



These are used for testing on the bench. This test with 5 cell 4000 mAh pack and a APC 10x7 yielded 905 watts, 14550 RPM and only 47 amps. This will be a great power system!

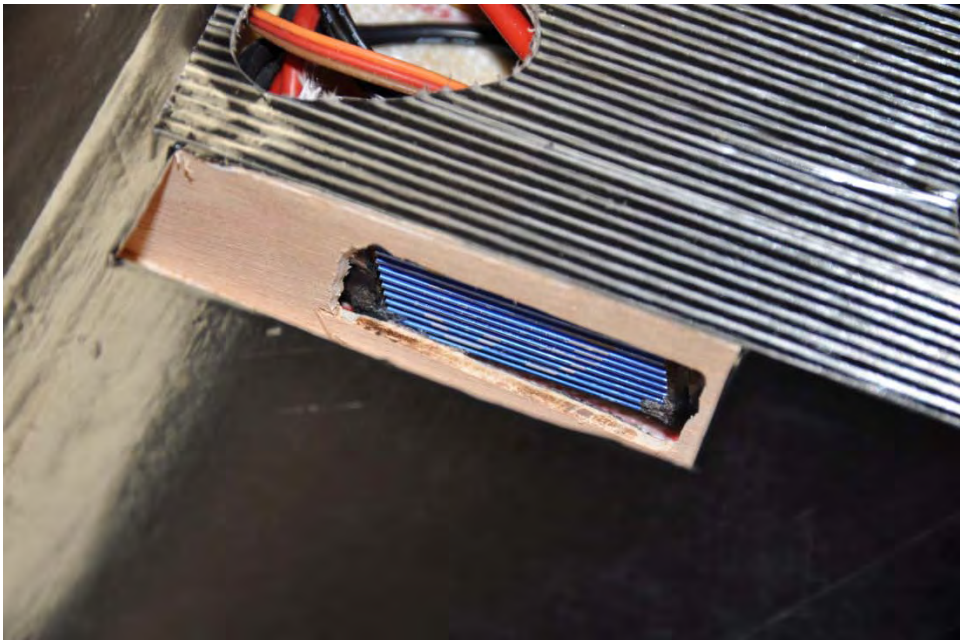
on top of the fuselage and down through a small hole in the top of the wing just before we get to the hatch. This also allows for a bit more room in the battery area. (Photo 3) A simple tie wrap to the motor spacer and we are getting close to getting to the field! After a few test runs on the bench I noticed that the ESC was getting a bit hotter that I really wanted so I decided to cut another cooling hole on the back side of the ESC. The back side of the ESC opens up to a hand hold and launching area on the bottom of the fuselage. This should be more than adequate air onto the ESC.(Photo 4&5)

The radio setup is very simple these days with my Futaba 12FG radio and the elevon mixing done for



me. A little tiding up of the wires and receiver, and a couple of hatches over the servos and we are basically ready to fly! I am using an educated guess on the CG balance point, and on the throws of the control surfaces, since I don't have any instructions. The first flight should be interesting at least!

Flying the Bullit resulted in a very quick and powerful system. The Bullit will accelerate out of a hand launch at a 45 degree angle and climb to the moon. My power analyzer shows a 47 amp, 905 watts and a measured RPM of 14550 static on the ground with an APC 10x7 E prop. The Hyperion 4000 mAh 5-cell LiPo give a flight time of 5-7 minutes with minimal throttle management. The calculated speed exceeds 80 MPH and is very fun to fly. Now I can experiment with props and get more speed. The speed controller is capable of 60 amps continuous draw from the motor and the battery can handle over 100 amps. This setup is still not pushing the component limits, yet we have over 200 watts per pound and very good performance and efficiency. I guess that I can probably push this system with an APC 10x10 and gain another 15 MPH or so.



Please let us know what you want to see in RCReport Online! We are here to keep you informed and entertained ! Don't for get to come to see us at our booth at the Southeast Model Sow in Perry Ga. We are in the McGill building at tables W1-W4 near the Raffle booth!

Until next month!

Tony Coberly

tonyc@rcreport.net

Smile! You could be the next Winner!

O.S. .46 AX

O.S. .55AX

O.S. .75AX

Smiley Face Contest #3 2010!

We are bringing back the smiley face contest. Throughout this issue we have placed five or more Smiley Face Figures like the one shown here (☺), but as before this page doesn't count. Write us and tell us where at least five are, and you'll be eligible for a random drawing in which the winner gets to chose from the three engine shown above. Two more winners will receive one year subscriptions or renewals to RCReport Online. Winners will be selected by a random drawing from all the correct entries received no later than April 1, 2010. No entries will be accepted after this date. Entries must be sent via US mail or E-mail only, and reference the correct contest number in subject line or address. Hobbico employees, RCReport Online employees, columnist and advertisers are ineligible for prizes. No Purchase Required. Valid in USA and Canada only.

smileys@rcreport.net Subject line: Smiley Face Contest #3 2010 US Mail: Smiley Face Contest #3, 2010 PO Box 12051 Huntsville, Al 35815

All terms subject to change without notice. This contest is void in any area, state, or locality where taxed or prohibited.

ELEVEN

Jim Mahoney, Lakeland, FL

ELEVEN

Daniel Schaller , Kinsley, Kansas

ELEVEN

R Duncan, Ridegway, VA

TEN!

Plane Doc AKA Don Lewis, Hendersonville, TN

ELEVEN!

Manfred Decker, Wahpeton, ND

ELEVEN.

Jay Stargel, Woodbine, MD

ELEVEN and a Frowney!

Milton Johnston , Acworth, GA

ELEVEN

Jim, Chino Valley, AZ

ELEVEN!

Lynn Perkes, Hendersonville, TN

NINE

Frank Maguire, South Portland, ME

NINE! And grumpy on page 33.

Thanks,

Gerald Ewell, Sr., Manchester, TN

ELEVEN and a frowney!

Larry Slowiak, Rhinelander, WI

SEVEN!

Richard Slomba, Methuen, MA

I found 11 this month.

Kenny New

Cape Girardeau,MO

Ten

Steve Malley, Charleston SC

eleven

James E. Fowler

Eleven

J. T. Scott

Eleven

Noel Hunt

Well everyone I am glad to say that the smiley contest has had great response. The winner will be contacted and announced in the March issue. The winner will receive his choice of one of these three engines: OS .46AX, OS .55AX, or OS .75AX. Keep searching those articles and columns.

Total Smileys for February 2010 issue was 12.

January Winner is Larry Slowiak, Rhinelander, WI.

Thanks for your submission Larry , your OS .75 AX is on the way!

Tony Coberly

tonyc@rcreport.net

Mail Call

Well folks keep your questions and comments coming. We will do our best to answer each and every question asked of us. We will continue to post a few each month for the rest of the readers to see your questions and comments.

RC Report Online Staff!

Dick Pettit,

Great column! I liked the info on the A-123s. What regulator do you use to step down the voltage for your receiver?

Thanks, Bill Rogers

Bill,

I build a 5 volt regulator myself from locally available parts; basically a 5 volt TO-220 part with 2 surface mount capacitors.

Basic fixed regulator circuit, but that's what I do for a living.

Dick Pettit

Sent in from Larry Slowaik:

I was wondering....

When is spring coming??

Sent in from Dick Sprau:

Inner Peace – This is so true!

- *If you can start the day without caffeine,*
  If you can always be cheerful, ignoring aches and pains,
  If you can resist complaining and boring people with your troubles,
  If you can eat the same food every day and be grateful for it,
  If you can understand when your loved ones are too busy to give you any time,
  If you can take criticism and blame without resentment ,
  If you can conquer tension without medical help,
  If you can relax without liquor,
  If you can sleep without the aid of drugs,

  ...Then You Are Probably The Family Dog!

RCREPORT CLASSIFIEDS

Wanted:

80 inch Hanger 9 P 51 and Ace Digipluse multi-charger Email: marshalemmendorfer@hotmail.com. Best to call 810-348-6390. Ask for Marshal

For Sale:

N.I.B Greatplanes Ryan STA (ARF).,82" span..90 to 1.20, Military Colors…$300

N.I.B.Kit: Bridi Bezzee Bee Sport Flyer 96" span…$275

3.0 and up MTR 46" Gator Speedboat w/30cc Gas Engine, New Hitec Radio, Ready for the water…$425

Victor V-32 Sail Boat w/ Radio, Servos etc…$185

All above prices do NOT include shipping. Shipping costs to be determined based on your Zip Code.

Contact Roger Rohloff, IUKA , MS, 38852 at 662 -423-1545.

Extreme Flight R/C 88" Yak 54 Electric!

- EMP 80mm motor
- 3-Futaba 9153 Metal gear servos
- APC 24x12 prop
- TruTurn spinner
- 2-6S 5000 LiPo packs!
- Bags for canopy, wings and tail!
- You need a 110HV speed controller, 2 additional servos for elevators, receiver battery and receiver and your ready to fly! Can be converted back to gas without problems at all! Will bring to Perry or deliver within 125 miles of Huntsville, AL

$1000.00 as listed
$650.00 without LiPo packs!
Tony Coberly
tonyc@rcreport.net

Great Planes Escapade Sport ARF

As reviewed in February 2010 page 67. Ready to fly with included engine, servos, flight pack and Futaba 7 channel FASST receiver. 4 flights on this model. Will bring to Perry or deliver within 125 miles of Huntsville, AL

$450.00

Tony Coberly
tonyc@rcreport.net

WANTED: RC Report Online is currently looking for new columnists in the fields of pylon racing and helicopters. If you or someone you know would be interested in joining our staff, please contact Julia Coberly at 256-503-8436 or juliac@rcreport.net to discuss these opportunities.

RCReport Online

The following pages are up coming events all around the USA...And Beyond!

The Chipola R/C Aviators and the GSWA Present

Warbirds Over the Panhandle

Giant Scale FLY-IN

March 19-20, 2010

Marianna, FL

- **RESTRICTED TO WARBIRDS ONLY, IN MILITARY OR CIVILIAN PAINT (Sorry, no turbines)**
- **OPEN FLYING FORMAT**
- **80" MONO, 60" MULTI-WING MINIMUMS**
- **$15 ENTRY FEE for entire event. AMA REQUIRED. VENDORS WELCOMED. (Vendors please call CD)**
- **EVENT FLYING HOURS - 9 AM – 4 PM CDT all days**
- **RV PARKING on site, no hookups**
- **600 x 90' turf runway, (150' runoff each end)**
- **LUNCH CONCESSIONS ON SITE**

Directions to flying site: Field located at south end of Marianna Airport/ Industrial Park. 4900 Sykes Blvd., Marianna, Florida – Where Florida, Georgia and Alabama meet.

Motel Info: Check GOOGLE/MAPS – Search: motels, marianna, fl (newer motels at I-10 interchange)
Recommended Restaurant: Madison's Warehouse Restaurant, Downtown Marianna (owned and operated by a CR/CA club member)

Web Site: www.chipolarcaviators.com Info: dcavin@earthlink.net (850)482-7090

The Palm Beach Radio Control Association's

2nd Annual

Rhinebeck South Jamboree

West Delray Regional Park

March 27 - 28, 2010

Registration 8:00 a.m.

10875 West Atlantic Avenue
Delray, FL 33446

For more information please contact the
Event Director - BOB TEMPLE, CD
561-391-5239 or e-mail at rft725@comcast.net

Pilots Raffle & Award

presentations will be made at the end of the event, highlighted by the

Col. Art Johnson
Memorial Award
For
Best of Show

Entry Fee Schedule:

$15.00 for 1 day
$25.00 for the 2 day event.

All registered pilots will receive one (1) meal ticket with their paid entry.

Our sincere thanks to the many contributors for the prizes and awards.

The event is open to all aircraft built and flown prior to December 31, 1939. Any size ..... as long as you can see it.

Sorry ..... WWII Aircraft are not eligible. Planes must be flown at the event in order to be eligible for awards. Pilots will use a spotter. Maximum of FOUR (4) aircraft in flight at any time. 72 Mhz transmitters must be impounded when not in use. Pit area restricted to PILOTS, CREW and OFFICIALS with current AMA card. To assure flight worthiness, all planes will be inspected prior to flight.

Aircraft of questionable eligibility will require documentation. There will be a noon time spectator walk around for viewing of all the aircraft.

AMA 55 pound weight limit applies.

AMA and Park Rules will be in effect and strictly enforced.

CHASE A LITTLE TAIL IN TEXAS

LONE STAR NATIONALS 2010 RC COMBAT

2548, 3696, SSC, Open B

March 26-28, 2010

Fort Worth Greater Southwest Aero Modelers

flygsw.org

Sponsored by:

Ron's Toys for Big Boys

Mike's Hobby Shop Superstore Carrollton, Texas

Airport Pawn and Hobby - North Richland Hills

Contacts:

Bob Leone: 817-907-5432

Ed Kettler, CD: 469-867-7981

Inland Northwest RC Swap Meet

Saturday
March 13, 2010
8:30 AM - 4:00 PM

Modeling Paraphernalia • Tools • Parts • Kits • Complete Models
Just about anything you could imagine for RC is here

Admission donation:
Adult: $3; Ages 13 to18: $1; Age12 and under free; Family: $5

All proceeds from booth rental, admission tickets, and food sales benefit the New Hope Resource Center, a non-profit social service agency providing emergency aid and services to low income families and seniors in north Spokane County

Sponsored by:

NW Pylon Racing Association
Inland Empire Quiet Flyers
Post Falls Flyers
Newman Lake Aeronautical Pilots Society
Coeur d'Alene Area Modelers
Barons Model Club
Farragut Flyers

Display Booth Registration

Swap meet booth rental recommended donation:
$15 for wall, $10 for interior. Includes a banquet table and chairs.
Due to the limited number of booths, initial registration is limited to one booth per person. We will contact you for booth selection and other information.
Any remaining spaces will be available the day of the show.

Name: _____

Address:_____

City, State, ZIP: _____

Phone: _____

Email: _____

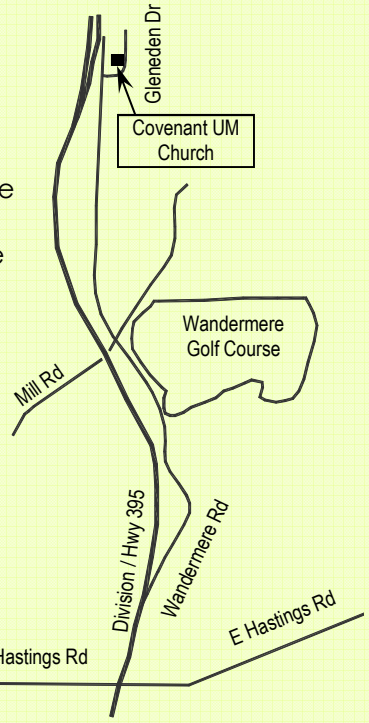
☐ I want a wall booth ($15). I would like booth number: _____

☐ I want an interior booth ($10) I would like booth number: _____

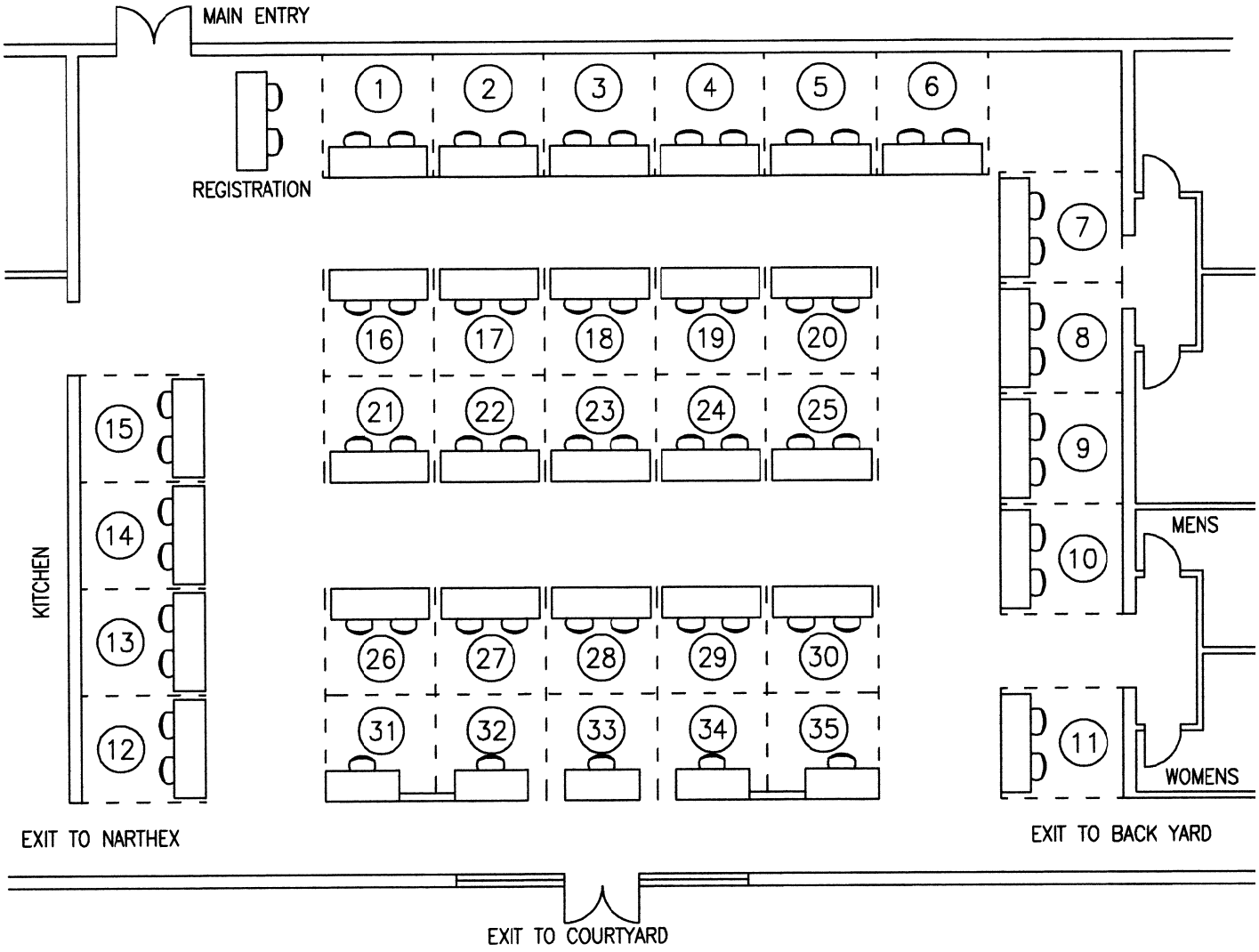
Make checks payable to "NHRC" (New Hope Resource Center) and mail to:

NHRC
c/o David Moore
15217 N Addison Ct
Spokane, WA 99208

Location:
Covenant United Methodist Church
15515 N Gleneden Drive
Spokane, WA
Near the Wandermere Golf Course.
North on Division to Wandermere Road.
Two miles north of Hastings Road.



For more information contact:
Robin Kirkpatrick: 489-5841, brkirk@comcast.net
Dave Moore: 979-8786, blueskydave@gmail.com
www.ieqf.org



Display Conditions

1. Swap spaces may be reserved, with advance donation.
2. Spaces are assigned on a first come-first served basis. One booth per person. No preference is given to previous participants. (This is a smaller space than past events, so we may run out of room. Make sure we know if you miss out because of lack of space and we'll make sure we have more room next year).
3. Any unreserved booths can be claimed in person at the church on Friday the, day before the meet, from 4:00 PM to 7:00 PM, and Saturday, the day of the meet, from 7:30 AM to 8:30 AM.
4. Swap spaces are available for a recommended donation of $15 for a wall table or $10 for an interior table, including a banquet table and chairs.
5. Assistance will be available to help you move your stuff into and out of the building on Friday from 4:00 PM to 7:00 PM and all day Saturday.
6. At this time we do not plan to have static displays. If you are really set on displaying your pride and joy, let us know and we'll see what we can do. If there are unused spaces still available Friday evening, some spaces may be assigned for non-selling, display purposes. We'll notify you if you can bring your baby to be displayed.
7. The building is carpeted. No oil or other residue allowed on the floor.
8. Use of a ground cover and/or muffler and carburetor plugs and/or other acceptable protection methods are required wherever used engines are displayed. You will be held financially responsible for cleanup and repair costs that are incurred at your booth.
9. Food and beverages will be available for purchase during the event.
10. Profane or other improper language or any other conduct which is objectionable in the judgment of the church is not allowed.
11. Smoking is prohibited in the building.
12. No alcoholic beverages or illegal drugs are allowed on the premises, including the parking lot.

On Top of the World® Communities

RC FLYERS

Proudly Presents The Fifth Annual

BIG BIRD FLY-IN

- Please enter the community through the SW 99th Street Road entrance off SR 200
- Registration starts at 8:00 am
- No registration fee
- Flying starts at 9:00 am
- Free parking
- Limited chairs available under shaded pavilion
- IMAA Aircraft Only
- No Jets

Hold Harmless Agreement required as part of registration.

For additional information please contact Doug Ensley, Event Coordinator at sdensley@cfl.rr.com

Saturday, March 27, 2010
Beginning at 8:00 am

ONE EIGHTH AIR FORCE SCALE MODEL FLY-IN

MARCH 13 AND 14, 2010

SUPERSTITION AIR PARK MESA, AZ

ON MERIDIAN RD JUST NORTH OF BROWN

A GOOD TIME FOR EVERYONE

SATURDAY NIGHT DINNER AT THE FIELD

OEAF'S UNIQUE AWARDS FOR MANY FLIGHT CATEGORIES

REGISTRATION STARTS AT 7:30 AM SATURDAY

AMA REQUIRED **AMA SANCTION 10-0157**

100 DB SOUND LIMIT

ALL TYPES OF SCALE AIRCRAFT WELCOMED

PARKING $6.00 PER DAY **NO OVERNIGHTCAMPING**

3D FLYING NOT ALLOWED

INFO CD: Howard Kennedy 602-361-8475 bushpilot1443@yahoo.com

COMMANDER: Jerry Wright 480-205-6821 jwright@bcaphoenix.com

www.oneeighthairforce.org

Manatee County Radio Controllers presents

Fri, Sat & Sun March 12, 13 & 14, 2010

DICK COLES MEMORIAL BIG BIRD FLY IN

AMA 10-0076

IMAA FL10-296-03-12-14

Registration 8 AM, Pilot Meeting 9 AM
Flying 9:30 AM to 3 PM
500 x 75' Grass Runway
80/60 or Quarter Scale Rule Applies
No Turbines
Noise limit 96 dbs @ 9'
$10.00 Landing Fee
Free meal ticket for Pilots
Public Restrooms, RV Parking,
Concession Stand on Site
Public Welcome—Parking $2.00 per car

Location: **7315 71st Ave E., Palmetto.**

Take I75 to X224, then 301 N to Erie Rd. Turn L to 69th St (2 miles) Turn L. Field Entrance on R (1 mile).

Contact Info:
CD - Jim Holloman 941-727-5670 (jhollo6540@aol.com)
Pres - Bill Cryer 941-794-5080 or Web Site (manateerc.com)

2010

FRIDAY, 5 MARCH AND SATURDAY, 6 MARCH

SOUTHEASTERN MODEL SHOW

THE WORLD'S LARGEST R/C SWAP MEET

FRIDAY: 1 - 7 P.M. AND SATURDAY: 8 A.M. - 5 P.M.

Over 1000 Tables of Merchandise
Raffles, Flying Demonstrations
Indoor Electric Fly-in, Boat Pond
MECA COLLECTO
RV Sites available; Call (478)988-6557
Ample Parking; Easy Entrance/Exit
Advanced table reservations and payment required - plan ahead tables go fast

Tables: Contact Norm Deputy
Email: ndeputy@bellsouth.net
Phone: (478)328-2689

GEORGIA NATIONAL FAIRGROUNDS
I-75 AT EXIT 135
PERRY, GEORGIA

TWO DAYS OF FUN!

OPEN TO ALL MODEL ENTHUSIASTS

GEORGIA AIRCRAFT MODELERS ASSOCIATION, INC.

GEORGIA AIRCRAFT MODELERS ASSOCIATION, INC.
GAMA
AMA Club # 228
Established in 1972
WWW.GAMARC.COM

WWW.GAMARC.COM/GEORGIA