

Propwash

The Newsletter of the Mercer County Radio Control Society
May 2005

Club Donates \$3,000 to the Sunshine Foundation



Members present check to the Sunshine Foundation.

MCRCS members Doug McMillan, Jans Brower, Jack Dempsey, and Floyd Smith presented a check for \$3,000 to the Sunshine Foundation (see related article on page 2) during the March 3, 2005 Dreamlift event at the Mercer County Airport. The donation, raised primarily through food sales and 50-50 raffles at the club's annual Jumbo Jamboree, represents what, over the course of 15 years, has become an annual tradition for the club. While the first contribution was only a few hundred dollars, the club's ability to support this worthy cause has grown over the years to the current level. According to club treasurer Jans Brower, the club has, to date, contributed well over \$20,000 to the Sunshine Foundation.

Jumbo Jamboree Set for May 28th and 29th

The MCRCS will host its annual Jumbo Jamboree at the club field on Saturday and Sunday of Memorial Day weekend later this month. The Jamboree, jointly sanctioned by the AMA the IMAA, will be open to large scale aircraft meeting the IMAA size and safety

requirements. And if past years are any indicator, this year's Jamboree should exhibit some of the most exciting models our hobby has to offer. In addition to crowd pleasers of the past, including Keith Zimmerly's Jenny and Don Rowley's P-47 Thunderbolt, we can hope to see Rick DeBastos' new Cub and Bill Zentmayer's Skyraider. (Word is that Bill's Skyraider has undergone some modification since the picture shown here was taken.)



Bill Zentmayer and Woody Miller prepare to flight test Bill's Skyraider.

The Jumbo Jamboree is not limited to club members. Rather, it has quite a wide draw with modelers from several states bringing their models to Warren Kruse Field. As well as being a modeler's event, this is a spectator event. Anyone with even a casual interest in scale aircraft will be thrilled by the sound of Don's Thunderbolt making a low pass, or by watching Keith's Jenny gently float past. And the ever-present prospect of a ground-shaking crash is sure to excite those with a more thrill-seeking orientation.

The MCRCS kitchen is reputed to have some of the best food in the hobby. Coffee will be available as early as 7:30 and breakfast will be served at 8:00. Brian's famous pork rolls with egg and cheese (AKA Heartstoppers) will be on the menu. And by popular demand, Dave's buttermilk pancakes will be available

as well. Lunch will start about 11:30 and will include the standards such as hamburgers, hotdogs, veggie-burgers, Joe's sausage sandwiches (with onions and peppers, of course), and French fries. For a special treat, we're hoping to persuade Carolyn Vale to make a batch of her Quilt Country Barbeque Sandwiches for at least one of the days.



Rick DeBastos prepares his Super Cub for flight.

As well as a venue for great entertainment, the Jumbo Jamboree is the primary funding vehicle for the club's charitable contributions to the Sunshine Foundation. All profits from the food concessions and the 50-50 raffles will go toward the 2006 contribution, which will be used to fulfill the wishes of several deserving kids.

MCRCS Designated Charity, The Sunshine Foundation



2005 Dreamlift flight leaves for Disney World.

The Mercer County Radio Control Society has supported the Sunshine Foundation with contributions resulting from profits at its events for about 15 years. Each year, the club presents the local chapter with a check during the Dreamlift event that usually occurs in May.

The Sunshine Foundation, formed in 1976 by a retired Philadelphia police officer, answers the dreams of seriously ill, physically challenged and abused children from across the United States. The Dreamlift programs give the participating children an opportunity to visit one of the happiest places on Earth, Walt Disney's Magic Kingdom. The Sunshine Foundation, since its inception, has sponsored 75 Dreamlifts.



Inside the Keebler Cottage at the Dream Village.

While visiting Florida, children stay in the Foundation's Dream Village, a 22-acre compound 15 miles from the Disney parks. The Village includes nine theme-based cottages, a wheelchair-accessible swimming pool, a handicapped-equipped playground, and a six-hole miniature golf course. For more information about the Sunshine Foundation, visit its web site at www.sunshinefoundation.org.



Inside the Seashore Cottage at the Dream Village.

Help Wanted – No Experience Necessary

The MCRCS sponsors the Jumbo Jamboree. This means that we, the members, are responsible for all of the work.

Setup day is May 27th

Friday, May 27th is the day that we set up all of the tables and concession stands, finish setting up the kitchen, place fences and barriers to facilitate crowd control, and rewire the PA system when the mice have eaten insulation from the wires. Younger members of the club (i.e., those under 70) are especially encouraged to help with the setup of the heavier items. Setup begins about 9:00 and should be done with some daylight left for a bit of flying (about noon).

Staffing of the actual event on Saturday and Sunday is directed by five team leaders. The team leaders are listed below, along with the members who have been on the teams in the past and are anticipated to be on the teams this year. If you are listed on a team and cannot participate, please contact the team leader ASAP. If you can participate, contact the leader anyway to make sure everyone is clear on roles and schedules. If you are not listed and would like to help, contact the leaders of teams that interest you to learn what you can do.

This is our biggest event of the year. Don't miss the opportunity to participate in it.

50-50

Paul Schumann (Leader) 609-586-1320

Impound

Jim Meighan (Leader) 609-586-7162

Bing Gearhart
Carl Gubkin
Patrick John
Dave Kanter
Pat Meighan
Frank Vorob

Kitchen

David Vale (Leader) 609-430-9633

Brian Erxleben
Dan Geerders
Joe Gendron
James Vale
Richard Wright

Parking

Jim Feszchak (Leader) 732-251-8547
Bob Bennett
Floyd Smith

Registration

Fred Doldy (Co-leader) 609-883-3902
Sal Lucania (Co-leader) 609-587-1248
Joe Spett
Bob Vanisko
Mel Weeast

Cleanup

There is no formal cleanup crew. All members who are available Sunday afternoon should help clean up the field and put equipment away.

2005 Building Contest

The 2005 Building Contest began with the static judging at the Lawrenceville library the evening of April 20th. It was held at Lawrenceville instead of our usual location because we needed a larger room to accommodate all of the airplanes. A total of 17 contestants participated (the same number as last year) with models in three classes. The ARF category was largest, with seven entries; the Scale and Non-Scale classes had five entries each. There were no entries in the Oldtimer or Unorthodox classes this year.

The Scale entries were

Tom Dyl	Spitfire
Gary Ebert	Corsair
Dick Moloney	Modified Mong
John Tanzer	Curtis Robin
Bill Zentmayer	AD-6 Skyraider.



Scale judges Bob Soden and Fred Doldy inspect Tom Dyl's Spitfire.

The Non-Scale entries were

Lucien Garcia	Super Sportster Twin
Carl Gubkin	Something Extra
Sal Lucania	Balsa Nova
Mike Luciano	Antic
John Pinto	Diamond Duster



Carl Gubkin shows his Something Extra to Non-Scale judges Joe Raimondo and Jim Feszchak.

The ARF Entries were

Paul Abati	Ryan STA
Rick DeBastos	Super Cub
Mike Garze	Mini Fontana
Sal Lucania	Robin R2160
Bob Levanduski	Pitts M-12
Woody Miller	Spectrum
David Vale	P-51 Mustang



ARF judges Doug McMillan (left) and Jans Brower (right) review Paul Abati's Ryan STA.

Joe Raimondo, the Contest Director, appointed five experienced modelers to assist him in the judging. Joe and Jim Feszchak judged the Non-Scale entries; Fred Doldy and Bob Soden were the Scale judges; and Doug McMillan and Jans Brower judged the ARFs. Collectively, these six judges had over 200 years of model building experience.



Contest Director Joe Raimondo inspects the field.

May 1st, the day appointed for flight judging, opened wet, windy, and cold. Although 9:00 was the appointed time, by 10:00 only about half of the contestants had arrived. Shortly after 10:00, based on the weather conditions and the minimal turnout, Contest Director Joe Raimondo made the decision to postpone the flight tests for two weeks. (The intervening Sunday was Mother's Day, which to many members constituted a kind of no-fly zone.) Thus, the next attempt at flight testing was scheduled for Sunday, May 15, beginning at 9:00.



James Vale keeps warm.

Family Picnic Coming June 12th

The MCRCS Annual Family Picnic is scheduled for Sunday, June 12th, at the Warren Kruse Field. Flying will begin as usual when the field opens at 9:00. Hamburgers and hotdogs will be served around noon. All members, their families, and friends who may be interested in the hobby are invited for a day of flying, food, and fellowship.

Bulletin Board Gets a Facelift

After fifteen years of use and weather, the MCRCS bulletin board display case (outside the fence at the north end of the pit area) was beginning to show its age. To the rescue came club carpenter Brian Bunda with his special skills and dedication. Brian built the original display case, but added a few improvements with this update including mahogany doors (which are resistant to rot), laminated glass (which is safe, like the prior Plexiglas, but won't yellow and crack), and stainless steel hinges. At the recent dedication of the Albert Einstein statue in Princeton, the sculptor noted that the granite base of that statue should last about 8,000 years. Perhaps Brian's latest improvements won't last that long, but then neither will we.



Brian Bunda refurbishes the bulletin board case.

Safety Switches for Electrics

By David Vale

We're all familiar with the dangers of spinning propellers: Small engines and motors can inflict a painful cut, larger ones can sever things. But electric models come with a special hazard, that of the unanticipated start. Every month or so, I find a new way in which an electric motor can surprise me. One of the first times occurred when I was adjusting servo directions on a model and inadvertently reversed the throttle channel. Another occurred when, noting no aileron response on checking out a model, I looked for a signal on another channel (yep, you guessed it: the throttle channel). And most recently I was surprised to find out that, although the servos are compatible, the directions for Hitec and Futaba are opposite (including the throttle channel and the connection to the electronic speed control [ESC]).

Glow models have a built-in safety advantage: Generally by the time you start the motor, you're done fiddling with the rest of the control systems. Furthermore,

a glow engine takes a positive action to get it going. I have never heard of a glow engine starting spontaneously. (Gas is, of course, another story.) Current electrics usually lack this safety feature, but it seems worthy to add, at least when the motors get big enough to reach the "sever something" level of damage.

I won't claim credit for any of the ideas I'm going to present here. I think I saw safety circuits on some Max-Cim harnesses and Bruce Evertsen of MCRCS incorporated the safety key in one of his models. But I will try to describe the concepts, issues, and circuits in sufficient detail that you will be able to implement them on your larger electric models.

The concept that I am suggesting is a dual switch system for electric models. One switch controls the flight electronics, the other isolates the motor. Most electrics in use today have either no switch and are hot as soon as the battery is connected (this is probably OK up through a Speed 400 model), or have a single switch that controls power to the receiver (and relies on the electronic arming circuit to isolate the motor). The latter generally works, except for a few situations. First, the electronic logic in the arming circuit is subject to damage and, while a useful safety feature, should not be relied upon (read the warning that comes with your speed controller). Second, I frequently find the need to adjust my flight controls. When the motor and the flight controls are on the same switch, the motor is hot anytime the controls are active.

So the concept is simple: Insert a second switch in the motor circuit separate from the flight controls. The simple concept is complicated by a few facts of life: First, the flight-control switch is often part of the ESC which supplies power to both the receiver (using a battery-eliminator circuit, or BEC) and the motor. Thus, the safety switch has to be installed between the ESC and the motor. Faced with three wires on a brushless controller, where do you put the switch? (I'll tell you later) Second, it may be desirable to completely isolate the battery pack from the electronics. When you put a switch on the input side of a big ESC, it has to be a big switch.

Let's deal with switching a motor after the ESC first. This provides an adequate safety switch because, when the switch is open, the motor can't start. In the case of a brushed motor, either line can be switched because breaking either of them opens the circuit. Breaking any one of the three leads to a brushless motor will also stop the motor, although it may jump to a particular spot in rotation before it stops. Switching any two of the leads isolates the motor.

One of the problems you quickly encounter, however, is that we deal with some pretty heavy Amperage circuits. Whereas the typical home outlet is fused at 15-20 Amperes, it is not at all unusual for an electric model to pull 50 Amps. The typical switch you find for electronics applications is rated at 3 to 5 amps. And that's an AC (alternating current) rating. For reasons I accept but don't fully understand, the DC rating is always much smaller (say half an Amp). A few things help, though, when it comes to installing a switch on the output side of the ESC. First, at least in the case of a brushless motor, you are now switching AC instead of DC. Second, the stress on a switch comes when making or breaking the circuit; generally there is no power in the circuit when you throw the safety switch installed on the output side of the controller. Finally, the typical effect of switch failure is that the motor quits; while this is annoying, it is usually not devastating.

So how do you switch the output side of a brushless controller? I'd suggest using a double-pole switch and breaking the circuit in two leads at once. The remaining lead can't do anything by itself. (I'll admit that this is all theoretical; I have never switched the output side of a brushless controller.)

Most of my larger applications separate the BEC from the ESC. This makes the addition of the second switch easier. For the BEC, I generally use a universal BEC (or UBEC), a switching power supply that reduces the voltage of the motor pack to 5 volts for the receiver and servos. This is relatively easy to switch because it usually draws low current (usually less than one Amp when it is first turned on). Although the instructions often show the switch in the output side, I prefer to switch the input side, which generally has lower amperage and allows me to completely isolate the electronics from the battery. (Switched on the output side, the UBEC will draw some amount of power from the batteries all the time they are plugged in.)

I have developed a preference for optically-isolated (OPTO) controllers in large models. I understand that they may transmit less electrical noise, but the real reason I prefer them is that they don't supply receiver power (and thus I don't have to clip their power leads, which sometimes interferes with their programmability). Conceptually the safety switch here is very simple: Just put a switch in one of the input leads to the ESC. That, combined with the switch to the UBEC, completely isolates the batteries from any current drain. (Without this complete isolation, forgetting your LiPo batteries in your plane for a few days will deplete and destroy them.)

The problem comes in finding a switch that is up to the job. You already know that the switch may have to handle 50 Amps of direct current. But it's even worse than this. Have you ever noticed the big spark you get when you plug your batteries into your ESC (even with the switch off)? This is the result of charging the relatively hefty capacitors in the ESC (kind of like opening a vacuum-packed container). The momentary effect is similar to a dead short, which can draw considerably more than 50 Amps. This high current demand at the switch's most vulnerable point can quickly destroy the contacts of a too-lightly rated switch. Unfortunately, most switches rated for, say, 100 Amps DC are going to be much bigger than you will want to carry in a model. (Some high-amperage switches are available at auto-parts stores.)



Evolution of the Ultra-key.

One solution is to be found in the Dean's Ultra Connector. I'm not sure what the official rating is of these connectors, but they often see use, with good results, in applications pulling over 50 Amps. And they can make excellent safety keys for models. I generally put a female Dean's connector in series with one leg of the ESC input circuit and then make a key out of a male connector. Essentially, the key is a male connector that has a dead short in it. The issue and opportunity for creativity here comes from the fact that these connectors have a very tight fit and require a significant tug to get them apart. The photograph above illustrates the evolution of plugs I have manufactured. The leftmost plug is a shorted plug with a handle cast of epoxy (using a wax mold). The other's use #8 copper ground wire in a variety of shapes, soldered into a direct short between the connectors. The one I like best is on the far right; it provides enough handle to grip and is still relatively small. All of the plugs have dead shorts at the connector. I also dipped them all in a brush-on insulating compound. This is not essential as no electric-

ity is flowing in the distal parts of the wire, but I thought it added a nice finishing touch.

My safety strategy in using these keys is to keep them in my pocket until I am on the flight line ready to fly. At that point, inserting the key is like starting the engine. Then, and only then, is my motor armed and capable of inflicting harm to the unwary. And when I recover the airplane after a flight, I will unplug the key at the same time I shut off the receiver. With this tool and this strategy, I hope unexpected motor starts will be a thing of the past.



Ultra-key installed.

For Sale

Quarter-Scale Fairchild 22, Ikon N'West, 98.5" wing-span, silk and dope, Pontiac Red/Polar Gray, no motor or radio, \$225. Paul Abati (732) 463-0514.

Kyosho Pitts ARF with Saito FA .72 4/C engine, 1100 MaH battery, five standard servos, and switch harness (just needs receiver). Cost \$624, sell for \$425. John Tanzer (908) 276-9354, johntanzer@earthlink.net.

Great Planes Fokker DR-1 tri-plane with OS .90 4/C engine, Nelson onboard glow lighter, 1300 MaH battery, five standard servos, switch harness. Cost \$631, sell for \$400. John Tanzer (908) 276-9354, johntanzer@earthlink.net.

The Plane Poet

Dry Off

The weather, it was dismal
for the Seventeen that day.
Rain drizzled on the rooftop;
chill wind gusted 'round the way.
And less than half their number
shivered, sodden in the shed.
The rest, who'd seen the forecast,
wisely snuggled warm in bed.

Long hours of skillful building
yield models built as planned,
but proof of flight demands that
they can both take off and land.
And in the weeks, the pressure
builds within the pilot's mind:
The final test, the flight check,
will be good to have behind.

So who could say the rainstorm
and the chill would not be brief,
or crafted wings rise skyward
in quick moments of relief?
Yes, who could quell the fever
of these flyers, young and old?
That fell to the Director:
"It's too windy, wet, and cold."

The Editor

He said he was just a poem-monger:
The muses had rhymes that were stronger.
Yet the business was such,
if the poems weren't that much,
when the news came out short they got longer.

Upcoming Events

May

- 15th Building Contest fly-off rescheduled
- 18th Meeting at WWL
- 27th Setup for the Jumbo Jamboree
- 28th-29th Jumbo Jamboree

June

- 1st Meeting at WWL
- 12th Family Picnic
- 15th Meeting at WWL

July

- 6th Meeting at WWL
- 20th Meeting at WWL

Club Information

The Mercer County Radio Control Society is an AMA Chartered Gold Leader Club. Its field is in Assunpink Wildlife Preserve off Exit 11 of Hwy 195. It meets at the West Windsor Branch of the Mercer County Public Library on the first and third Wednesday of each month at 8:00 PM. The club publishes this newsletter for members approximately six times a year and operates a web site at www.mcrcs.com.

Officers

President: Doug McMillan
VP, Membership: Sal Lucania
VP, Events: Armand Graziani
Secretary: James Feszchak
Treasurer: Jans Brower

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