



April

Minneapolis, Minnesota U.S.A.

2004

TCRC'ers Say Goodbye To Winter At Fun Fly

by Conrad Naegele

A good time was had by all!



The participants at the 2004 Winter Fun Fly. (Photo by Pat Dziuk)

About 10: AM on a sunny , somewhat windy Saturday morning, members and guests of the Twin City Radio Controllers met at the Jordan field for an end-of-winter fun fly, all season flyer qualification, and camaraderie.

There were 7 to9 regular members plus 2 guests. The wind was just a little sharp, but the snow had a great ski crust. Someone (I'm not sure who), had snow-blown the runways, so we had a choice of skis or wheels. There were no discernable crack-ups that I observed, so all went well. The brush piles still loomed on the north side but the field was in

good shape. The driveway was a little muddy due to the nice 30 + degree temperature.

Around noon the grill was started up, and after what seemed like forever the coals heated up, and a 'picnic' of hot dogs, chips, pickles (Gedney, of course!) relish, pop, and hot coffee was enjoyed by all in attendance. The hot food and drink really hit the spot.

For such a nice day. the turnout could have been better, but Saturdays and Sundays are pretty busy days.

We had two guests present – Brian and Amy McCutcheon – who stopped down to see the field. They must have been impressed because Brian joined TCRC at the next meeting.

Anyway the weather co-operated, so it was a very enjoyable fun fly. To see more pictures, see page 3 of this newsletter, or go to the club's website, www.TCRCOnline.com where many more have been posted.

The Winter Fun Fly was meant to be a goodbye to Old Man Winter, and a welcome to a hopefully soon to arrive spring.

(Editor's Note: Special thanks to Conrad for being CD for this club event.) ☺

From The Cockpit Of The President

by Scott Anderson

The weather has been kind to us for the past couple of weeks. Temperatures in the lower 60's and rain showers have melted the snow from the field and given us wonderful flying days. My March flight was warm & sunny last week! The great weather and our great flying site have given us several new members joining us for flying and social fun. Make a point of introducing yourself to new faces when you are at the field. Don't wait for someone new to come to you, they may be shy, they may need help and intimidated by your equipment and flying skills. I know there are many great clubs in the area, but let us try to be known as the friendliest flying club in the region.

I want to again thank our Editor & Publisher, Jim Cook for his 16 years of writing, editing, printing, assembling, and mailing the TCRC *Flare Out* Newsletter to the local membership, extended membership, local hobby shops, and clubs we share newsletters with. This has been as many as 200+ copies a month that Jim has personally arranged, organized, and photocopied each issue. In addition he and his wife Mary and a few helpful members have hand-collated, hand-stapled, hand-labeled and hand-stamped each issue before they get them into the mail to you.

Jim's schedule has been complicated with a vacation home in Wisconsin (read: "out of town 3 weekends per month") and thoughts of retirement. To further complicate matters, Jim's loyal 'posse of newsletter assemblers has diminished to just he and his wife Mary. With these changes Jim has asked that someone else pick up the task of printing, assembly and mailing of each month's final product. Jim will continue as editor and contributor providing a complete digital document that can be published. Board member Mike Timmerman has researched commercial printers and found that continued hard copy mailing of the *Flare Out* could cost as much as an additional \$150 per month to the club.

We could spend the additional funds (could be as high as \$1,800 per year), or we could look to a blend of media to distribute and enjoy your next issue of *Flare Out*. Over the past 6 months our new webmeister, Pat Dziuk, has updated and recreated www.TCRCOnline.com so we can enjoy the latest edition of *Flare Out* each month, as it is prepared. This is a great way to see the pictures in color and you can choose to print it at home if you want a hard copy. We need to know if you are willing to take the newsletter digitally (from the website), or prefer to get the hard copy in the mail. If we get enough people to read the newsletter online, then we can minimize the added costs to the club. Send your preference to the following e-mail address, board@tcrconline.com and we'll count the feedback by April 15th.

We have a building contest coming up on May 1. Jay Bickford is the CD. What have you built since last year that you'd like to enter?

I'll see you at the field! ☺

New Members

Several new members became part of TCRC at the March regular meeting.

Stephen O'Hearn lives at 16704 Joplin Way in Lakeville, 55044. His telephone number is 612-834-0514 and his e-mail address is ohearn77@hotmail.com. Steve has been in R/C for more than eight years and currently flies an Ultra Sport 40 and a 90-size Extra 300 S. He has transmitters of channels 29 and 57.

Brian McCutcheon lives with his wife Amy at 3521 Texas Avenue S. in St. Louis Park, 55426. Their phone number is 952-935-2054. Brian has been flying for five years and currently has an Aerostar 40 and a Sig Astrohog. He has transmitters on channel 22 and 32.

Scott Johnson lives with his wife Jennifer at 10629 Johnson Road in Bloomington, 55437. Their phone number is 952-893-9952 and his e-mail address is sjohnson@fwhlaw.com. He currently flies a SPAD Debonair, and is building a Great Planes J-3 Cub. He has a transmitter on channel 38.

When you see Steve, Brian, and Scott at a meeting or the field, be sure and introduce yourself and welcome them to TCRC. ☺

Pictures From TCRC's Winter Fun Fly



Mark Folkerts, armed with shovel, prepared the pits at the Winter Fun Fly.



The shelter was a popular place between flights at the Winter Fun Fly.



Morgan Larson taxis his Cessna out for a snowy flight at Jordan field.



Conrad Naegele was both CD and chef extraordinaire at the fun fly.

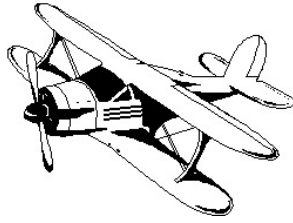


The flight line was a busy place.



Rick Smith enjoys the sun during a winter flight.

Show & Tell



Lots of nice planes showed up at the March membership meeting.



John Berk had his newest plane – a P-51 Mustang. This plane was given to John ten years ago by Ted Stannous, who designed and built it with exquisite detail. John powered it with an OS 61, but it proved to not be a reliable engine in the plane. The plane was done in silver with a yellow spinner and nose and a green front deck. The P-51 had a sliding canopy, and the entire top of the plane was easily removed for service. John had scale-size ailerons, which gave the plane a very slow roll rate. John has flown it many times and said it was a nice flyer and very scale-like.



Prolific builder Geoff Barber had his newest plane, an F4U Corsair. This plane was a Great Planes kit, not an ARF, and was very nice looking. The plane was done in Navy blue and was powered by a Tower 46 2-stroke with a Slimline Pitts muffler. At the meeting, he had a 3-bladed prop on the engine. Geoff said he tried putting on scale-like panel lines, following a scale book to some extent. He modified the single aileron servo and bell crank system and installed two servos with direct connections. He also wants to add a center-dropping tank. As of the meeting, the Corsair had yet to fly but the maiden flight would be this spring.



Larry Couture had his newest electric at the meeting. This was a Kyosho ARF electric Spree Sport. It was done in white with red trim and was nice looking. It was powered with a 3.80 geared motor. He said it was a nice plane, easy to finish, and only cost \$80 which included the motor. It weighed in at 8 ounces, not including the receiver and batteries. The only negative was that the canopy, which was the hatch to the electronics, was only held in place by Velcro. As of the meeting, the Sport Spree hadn't been flown.

Thanks to John, Geoff and Larry for sharing their most recent projects with the rest of the membership. Bring your newest plane to the next membership meeting. ☺

TCRC Building Contest
Saturday, May 1st

2004 TCRC Mowing Schedule

For the week of . . .

Date	Member	Area
April 25	Orv Schneewind	Runway edges
May 2	Stan Erickson	Runway edges
May 16	Conrad Naegele	Runway edges
May 23	Rick Smith	Runway edges and north section
May 30	Jay Bickford	Runway edges and south section
June 6	Jim Ronhovde	Runway edges and north section
June 16	Dave Andersen	Runway edges and south section
June 20	Jim Miller	Runway edges and north section
June 27	Mike Timmerman	Runway edges and south section
July 4	Conrad Naegele	Runway edges and north section
July 11	Rick Smith	Runway edges and south section
July 18	Pat Dziuk	Runway edges and north section
July 25	Dan Stensby	Runway edges and south section
August 1	Dave Andersen	Runway edges and north section
August 8	Stan Erickson	Runway edges and south section
August 15	Conrad Naegele	Runway edges and north section
August 22	Jim Ronhovde	Runway edges and south section
August 29	Orv Schneewind	Runway edges and north section

Date	Member	Area
Sept 5	Jay Bickford	Runway edges and north section
Sept 12	Dan Stensby	Runway edges and south section
Sept 19	Jim Miller	Runway edges and north section
Sept 26	Pat Dziuk	Runway edges and south section
Oct 3	Mike Timmerman	Runway edges

The north section is all of the grass north of the runways. The south section is all grass south of the runways, including the infield, pits, shelter, parking lot, overflow parking lot and road edges as needed. Runway edges include at least 20 feet around the runways plus 80 feet off the end of each runway. All mowing is as needed. Use whichever machine you prefer. In the case of flooding or excessively soft ground, mowing for the scheduled week may be skipped.

When the active field is the fairgrounds, mowing applies to the entire field as needed.

Choose any day of the week to mow, but late in the week is preferred. Don't mow where flying is taking place. Flying takes priority over mowing.

In case you cannot mow on the scheduled week, please exchange places with another mower, or find a replacement and/or call Jay Bickford.

You are responsible for fuel. Send fuel receipts and other expenses to the treasurer for reimbursement.

Thanks for you help.

Mow Meister: Jay Bickford, 952 890-5678

Crew chief responsible for large tractor maintenance: Jim Ronhovde, 612 922-5319

Crew chief responsible for small tractor maintenance: Don Olson, 952 443-2035 ☺

From The Co-Pilot's Seat

by Jay Bickford

Are you ready to fly?

Well, here it is the end of March, and spring has officially arrived. Or at least that's what the calendar tells us, even if the weather here in Minnesota doesn't always seem keep up with the calendar. Of course, with the arrival of spring, a young man's fancy turns to — well, flying. What did you think I was going to say?

With the advent of good flying weather, now is the time to get all your airplanes and other assorted flying gear ready for the first trip out to the field. One of the most important things to do is make sure that all your batteries are charged and ready to go. You did cycle your receiver and transmitter batteries a couple of times over the winter, didn't you? You didn't?! Shame on you! Anyway, whether you did or didn't doesn't really matter as much as what shape they are in right now. It is a good idea to cycle them a couple of times to determine if they are still up to snuff, or if they should possibly be replaced. With nicad receiver batteries, the usual rule of thumb is this: If the pack loses 10% of its stated capacity within 24 hours of charging, it is best to relegate that pack to doorstep status. If the pack loses 15% or more of its capacity within a week, it should be considered suspect. Let me give you an example. Let's say you have the standard 600mAh,

4.8volt nicad receiver pack that came with your radio. Cycle it once and record the full capacity just after charge. For this example, let's say it came out at 598mAh. (Of course, you will need a charger capable of giving you these readings, such as the Triton from Great Planes or similar. You can't do this test with the 'wall-wart' charger that came with your system.) After waiting 12 to 24 hours, cycle the battery again, and this time note the discharge capacity, as well as the charge capacity. Let's say the discharge capacity came out at 525mAh. Since this number indicates a loss of greater than 10% of the full charge capacity, this pack should be replaced. Apply this same formula to your transmitter packs as well. What this usually means is that you will end up replacing your nicad battery packs once every 2-3 years or so, depending on how much they are used and how well they are cared for. But don't just say, "replace every 3 years," and call it good. Use the capacity check as your ultimate test.

Next, if you use an electric starter and fuel pump, make sure the lead acid battery in your flight box is fully charged. Also, charge up your ni-starters so they are ready to go. I personally like to carry two in my flight box. That way I always have a spare if one of them dies while I am out for a day of flying.

The next thing you should do is to give your airplanes a thorough checkout. I like to start at the front and go toward the back, but use whatever system works for you. First, check the engine. Are all the bolts tight? Both engine bolts and

engine mount bolts? What about the engine mount itself; does it have any cracks? And how about the fuel system? Have you pulled the tank since you built the plane? Fuel systems can deteriorate with age, and it may be time to replace the stopper in the fuel tank to avoid leaks. What about the fuel lines? What kind of shape are they in? If they are suspect, replace them. Fuel tubing is cheap. Although I understand replacing it can certainly be a chore.

Next, take a look at all the servos. Are they all mounted firmly and are all their mounting screws still in place? If any are missing, replace them. And if they are mounted into wood, make sure the holes are not stripped out. If they are, a repair will be in order. While you are checking the servos, make sure all the servo arms are screwed firmly to the servo output shafts. Check all of the pushrod connections at the servos as well. I personally only use 'Z' bends to connect to servo horns that are in charge of a control surface. This way there is no way they can come loose in flight, short of breaking the servo horn itself. E-Z connectors are great for the throttle servo, but they could end up coming loose on a high stress control surface servo and leading to a crash.

Next, check all your control surfaces. Inspect all the control horns and your adjustable pushrod connectors. If you are using adjustable nylon pushrod connectors, check the pins for cracks. They are very thin and can break due to fatigue and age. Also, give all your control surfaces a

Continued On Page 7, Col. 1

Co-Pilot's Seat

Continued From Page 6

good tug to check the hinges. I would much rather have a control surface come loose in my hands during this check than to have it come loose in flight. Can you spell disaster? I thought so.

And while we are at all this pre-season checking, give the covering a good cleaning and looking over. Look for loose corners in the covering and for tears and holes. If there are loose corners, clean the adhesive side with a Q-Tip and rubbing alcohol to remove any grease and oil, and then seal it down again with a covering iron. If there are holes in the covering, make some small patches to cover them up. If you round off the corners of the patches instead of leaving them square, they will be less likely to lift up later on. Also, don't forget to clean the covering thoroughly with alcohol before applying the patch. It will stick better. If you built the plane from a kit, just use some of covering left over to make the patches. If the plane is an ARF, most modern ones are covered with either MonoKote or Ultracoat (Oracover). Rolls of covering material of matching colors can usually be purchased at your favorite hobby store. You can then use the leftovers to cover that kit you always wanted to build. (Funny how things seem to come full circle, isn't it?)

With all this taken care of, your planes and support gear should be ready for the first trip of the season to the field, even though your

thumbs might not be. If only you had joined us for winter flying...

See you at the field! Until next month...

For more information on battery care for R/C applications, check out Red Scholefield's R/C Battery Clinic on the web at <http://www.rcbatteryclinic.com/>. ☺

The Revamped TCROnline.COM Website Enters its Fifth Month

by Pat Dziuk

The new TCROnline.com website has been operational since late last November.

Our website is valuable tool not only to our current members, but it is a great way to attract new members. A number of our new members that joined in the last few months got their first impressions of our club from the website.

Our website is host to the following information: Club info, Calendar of events, Photos and movies of recent events, RC related links, Contact information and a discussion forum.

Our website is updated four to five times a month with new information and photos.

One of the more potentially powerful tools is our online discussion forum. The discussion forum is a great way to ask questions and share you're your

information with other club members.

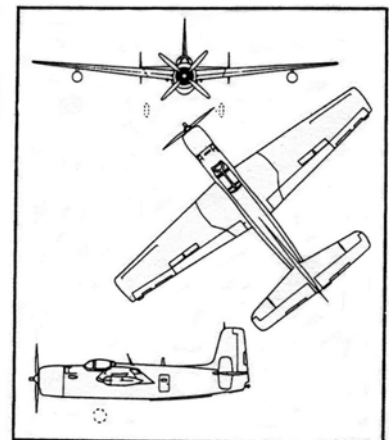
You will need to register and select a user name and password to post new topics or reply to existing ones. The process is simple; follow the "Register" link at the top of the discussion forum main page.

It takes some commitment by the forum members to make it successful. So, if you haven't already registered do so soon. If you are already a registered member, post a topic and reply to ones already posted.

If you are interested in other RC airplane discussion forums, be sure to checkout www.rcgroups.com for an example of a forum that has an active member base.

If you have ideas or suggestions for our club's website, please feel free to talk to me at a club meeting or at the field. You can also email me at pdziuk@mn.rr.com. ☺

April Mystery Plane





by Klotz the Kat

I am so glad that Dave Brown is addressing safety (*Model Aviation*, Feb, 2004).

To date, the AMA has not been a leader in this issue. The AMA air show team, the Shea stadium catastrophe, cross-country flights, and the recent Atlantic crossing, all sponsored by the AMA, have encouraged foolish behavior and made us look dangerous. AMA safety rules are not useful. The AMA does not address modern problems such as fire, tie-downs, animal control, turbo-props, long-distance flight, catalyzed paint, indoor RC, pits and buffer zones. *Model Aviation* doesn't even have a safety column any more.

The IMAA was organized, in part, to provide a safety program that the AMA failed to address. But, alas, even that has become so watered down that it is effectively lost.

With no useful nationally formulated advice, individual clubs must cobble safety procedures from their own experiences. With no national database, mistakes are repeated.

Dave Brown asks us to draw the line. We must. But we need much more than our own individual experiences to know what the dangers are.

Imagine the FAA and the NTSB keeping accident reports secret. How would that serve the public? In contrast, the AMA does not disclose the nature of its insurance claims. We need that information. There is no need to name names or settlements, only the circumstances. I urge you to purchase a copy of *Flying* magazine. Read the "On The Record" column of accident reports. Something like that is appropriate for *Model Aviation*.

Some may fear bad press. But concealment is worse. We need accident information for our own safety. And we need it to correct our poor public image and to dispel certain ridiculous rumors. For example, when applying for a conditional-use permit, we need documented proof that our airplanes don't fly miles away, rain fire on crops, and make bulls impotent (actual hearing complaints -- no kidding). Hopefully, accident reports will show that we are not dangerous to the public. But if we are, they will show us what we must do.

So here's where I would draw the line:

1. The AMA should establish a fulltime safety officer position — an NTSB for model airplanes.
2. *Model Aviation* should publish hazards as part of a monthly safety column. The column should request modelers to report incidents in confidence to the AMA for no-fault analysis such as emerging trends and product safety.

3. The AMA should develop a continuously evolving safety policy, not more rules. This policy should include recommended procedures that are detailed, objective and justified with facts. As a minimum, they should include advisories on model construction, engine run-up, field layout, spectator protection, and flight control. .

If you agree, please express your thoughts to your AMA VP today. ☺

Building Contest Saturday, May 1st

The TCRC Annual Building Contest will be held at the Jordan field on Saturday, May 1, unless weather or water forces a change of location to the fairgrounds. Start time is 9:00 AM.

The board has appropriated prize money for the winners in each of the four divisions this year. The divisions are: 1) Trainer; 2) Scale; 3) Sport/Pattern; and 4) ARF. First place in each division will receive \$25 and a blue ribbon, 2nd and 3rd places will receive a red and white ribbon respectively. All airplanes entered in each division must be capable of flight, although they will not be required to fly that day.

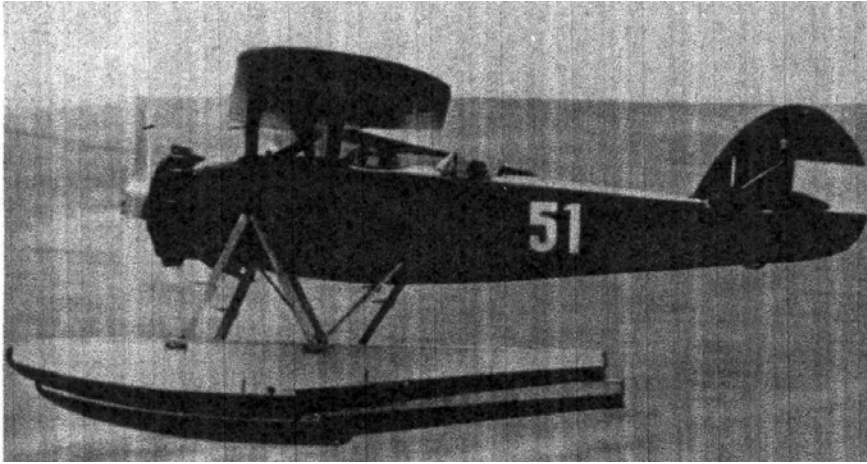
Following the judging, the club will have a light lunch of hot-dogs and pop, and the membership will then hopefully have the rest of the afternoon for flying.

Get your new creation ready for the 2004 TCRC Building Contest on Saturday, May 1st. ☺

Rogozarski PVT-H

by Conrad Naegele

The March Mystery Plane was the Rogozarski PVT-H.



Virtually all pre-war Yugoslav fighter pilots were trained on an exceptionally maneuverable 2-seat parasol-winged advanced trainer.

The exceptional aerobatic capabilities of the PVT interested the Yugoslav Naval Air Service (I know, but see a map) and it requested a two-float conversion. A pair of standard Edo floats were fitted which required no major modification. The PVT was of mixed construction, the wing was wood, with steel tube fabric-covered surfaces, fuselage was primarily wood. Floats were of light alloy and fastened to the fuselage via sloping N struts.

Strangely, the fitting of these floats had virtually no effect on the splendid aerobatic abilities of the airplane. The plane so reconfigured was ordered into production for advanced fighter pilot training. They were in full operational use until the outbreak of WWII. They were then relegated to recon duties.

The PVT was however with a Gnome 7-cylinder radial engine that developed 450 horsepower. It had a wingspan of 36 feet 9 inches and a gross weight of 3,324 pounds. It had a speed of 146 mph and a range of 289 miles.

Spring Float Fly May 8th

The Annual TCRC Spring Float Fly is scheduled for its usual 2nd Saturday in May – May 8th, at Bush Lake in Bloomington. Start time is 11:00 AM.

The Float Fly will be in its normal location at Bush Lake Park on the beach by the shelter. The event is for any pilot who has a plane on floats and a current AMA membership card. The float fly always attracts a lot of members from other clubs, tons of spectators, and some very beautiful float planes.

If you haven't flown off of water, it is something every R/C pilot should do at least one time. You have plenty of warning to select one of your planes and put floats on it. Once you give it a try you will be a regular at the TCRC float fly events.

TCRC always has its retrieval boat at the float fly in case a flyer has a dead stick water landing, or worse. We also have a large number of members who come out to see the neat planes, help out anywhere they can, and just to enjoy a great day in May.

Mark your calendars now and plan on attending TCRC's annual Spring Float Fly at Bush Lake on May 8th as a flyer, a spectator, or preferably, both. ☺

TCRCOnline.com

Use It!!!

Publisher Needed

Jim Cook has been editor and publisher for the TCRC *Flare Out* for 17 years.

Because of time constraints, Jim has to give up the publishing portion of the newsletter, but is willing to continue as editor.

As editor, he will still write or commission articles, format them and put them into finished form for publishing.

The publisher's job is to take the finished formatted pages and print them, fold them, label them, stamp them and mail them.

Jim, Pat Dziuk and Mike Timmerman are researching who and how the publisher's job can be handled by a club member at a reasonable price to TCRC.

If you can volunteer your time to help in publishing, please give Pat Dziuk or Mike Timmerman a call. ☺

Members Missing

According to treasurer Rick Smith, the following have not renewed their membership in TCRC for 2004:

- Brandon Anderson
- Jeremy Barsness
- Mike Danielson
- Charlie Eide
- Joe Engle
- Will Hornseth
- Scott Johnson
- Bruce Kelly
- Mark Lowry
- Walid Maalouli
- Nathan O'Connor
- David Pecoraro
- Dennis Spletstoser
- Kevin Strathy
- Branden Woodgate
- Meri Woodgate
- Greg Woodgate
- Jerome Yahnke

These members have been dropped from the roster and from the newsletter mailing list. ☺

Calendar

Apr. 2-4	Toledo R/C Expo Toledo, Ohio
Apr 13	TCRC Membership Meeting, 7:00 PM Room H195 Hennepin Technical College Eden Prairie
Apr. 20	2 nd Qtr. TCRC Board Meeting HTC, 7:00 PM
Apr. 24	Fairgrounds Clean-Up & Fly-In
May 1	TCRC Building Contest, Jordan Field Jay Bickford
May 8	Spring Float Fly Bush Lake, 11:00 AM Jim Cook

TCRC meets every month on the 2nd Tuesday at 7:00 PM in room H195 at the South Hennepin Technical College located at 9200 Flying Cloud Drive (Highway 212) in Eden Prairie. Guests are welcome to attend these meetings.

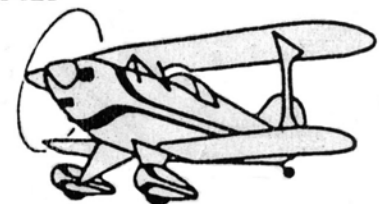
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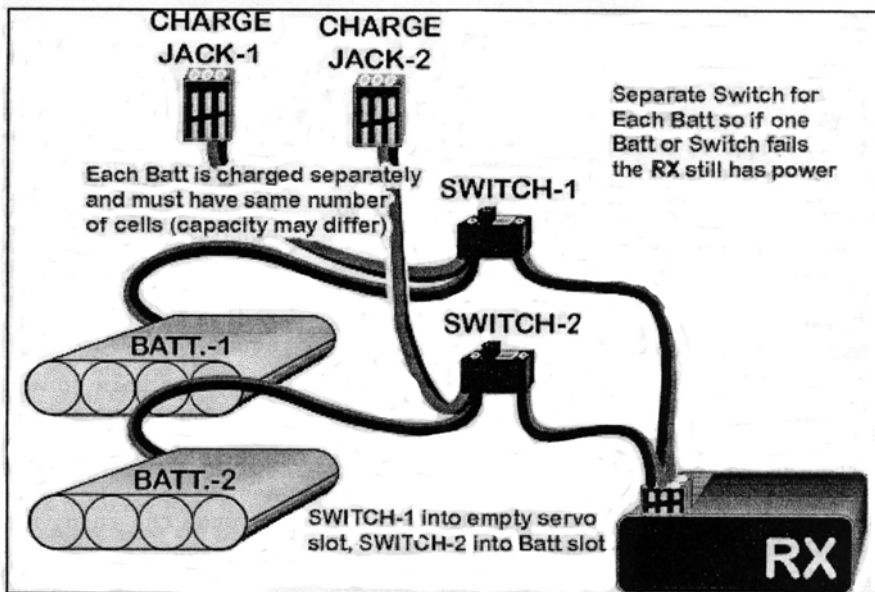
The Cheapest Insurance You Can Buy

by Jason Riley

Almost a year ago I wrote an article in the Newsletter about the use of two switch harnesses and two battery packs as added insurance against the failure of either. Since I have either witnessed, or been made aware of, a number of crashes that could have been averted by using this method, I decided to write another article covering the same topic.

The best part is that for about \$30 and ten minutes worth of effort, you can virtually eliminate the possibility of crashing because of a failed battery pack or switch harness. Now that's a pretty bold statement, isn't it?

Let's have a look at how it all works.



This is extremely easy to setup and is priceless for the amount of peace of mind it gives you. The first thing you need to do is get hold of a second switch and a second battery pack. You plug them into each other in the normal fashion, and then you plug the switch into any vacant slot in your receiver. You will now have one battery/switch plugged into the normal 'Batt' slot, and another battery/switch plugged into another vacant slot of your Rx. You should end up with something similar to what you see in the diagram above. The one important thing you must be careful of is to match the two battery packs. They can be of different capacity, but they must have the same number of cells. Both may be 4.8V packs, or both may be 6.0 V packs, but you cannot mix a four-cell

pack with a five-cell pack. I'm using 2 four cell packs. One is 500 mAh and the other is 11 00 mAh.

Some 'experts' may argue that blocking diodes are required to prevent the two packs 'cross charging'. This cannot happen because the discharge voltage of one pack can never be as high as the voltage required to charge a second pack (assuming equal number of cells). Since shorts rarely occur in fully-charged packs, the risk of one pack 'dumping' into another pack with a shorted cell are insignificant. A simple ESV preflight test would detect a pack with a shorted cell. Many thanks go to Red Scholefield for this information and the great diagram.

If you would like an in depth discussion on this issue, have a look at Red Scholefield's R/C Battery Clinic at <http://gnv.fdt.net/~redscho/>

(Jason Riley is the newsletter editor for MERCC, Metro East RC, East Dallas, Texas.) ☺

Stud Threads

You know those threaded metal studs you get with your Ni-Rods?

If you use a small electrical wire nut screwed into one end of the stud, you'll find it much easier to screw the other end into the inner pushrod of the NiRod. It saves the threads too.

(Reprinted from the newsletter of the Duluth/Superior R/C Club, Knife River, Minnesota, Joan Johnson, Editor.) ☺

Editor, Jim Cook
1075 Miller Street
Shakopee, Minnesota 55379

Great Programs At TCRC



Dave Andersen had a full house as he gave a presentation on designing and building scale aircraft. This is the same presentation he will make at Toledo Expo this month. ☺

THE TCRC FLARE-OUT Monthly Newsletter



** TWIN CITY RADIO CONTROLLERS INC. **

Purpose: To preserve, encourage, and further develop the hobby of building and flying radio controlled model airplanes.

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