The Repeater

The Official Publication of the Twin Cities Repeater Club, Inc.

Mission Statement of the Twin Cities Repeater Club, as Adopted on September 20, 1993

The purpose of the TCRC is to facilitate the local communication needs of its members by owning and operating a state of the art wide area coverage two meter repeater system. The club will further involve itself in secondary activities intended to (1) Promote the exchange of ideas and information related to amateur radio, (2) strengthen the fellowship and camaraderie among the members, (3) serve the local amateur radio community, and (4) increase local public safety.

Quarterly Membership Meeting

The TCRC will hold its next Quarterly Membership Meeting on Tuesday, March 25, 2003 at 7:00PM at the Burnsville City Hall. Refreshments will be served at the meeting, and talk-in will be available on the WØBU 147.21/147.81 MHz repeater prior to the start of the meeting.

Besides the usual club business, we have a special topic to discuss at this meeting. The Twin Cities Repeater Club has been asked to donate funds to the establishment of a state-wide Emergency Packet Network, and the Board of Directors is receptive to the idea. However, the Board would like the opportunity to discuss the project with club members and solicit their feedback before making a commitment. There will be a formal presentation on the topic.

It's Severe Weather Season Again

As I sit here in my chair writing this, it below zero outside with snow on the ground. And here I am talking about severe weather already. Well, believe it or not, warm winds and moderate temperatures arrived between the time I wrote this article and the time the Editor got around to publishing this issue of the newsletter. With that (the changes in the weather, not the publication of the newsletter!), come thunderstorms and all sorts of severe weather.

Fortunately, last year was a very mild one, lacking in many severe storms. That may have led you to forget that in order to remain as a Metro Skywarn certified spotter you need retraining every other year. So, if you didn't take a Skywarn spotter class last year, you are due. The TCRC again sponsored a free Metro Skywarn training class for all interested amateur radio operators (no you need not be a TCRC member) on Saturday, March 15, 2003, from 9:00AM to 1:00PM, in the Council Chambers, at Burnsville City Hall. Participation was excellent. About 50 folks came!

If you have never taken a Metro Skywarn spotter class this is an excellent opportunity to learn about the severe weather we experience here in Minnesota. The class is very interesting, with lots of slides of thunderstorms, cloud formations, tornadoes and other severe weather. The class presentation takes about three hours and the little quiz at the end another half hour or so. If, for some reason, March 15 didn't work for you, the complete Metro Skywarn class schedule can be found on the Metro Skywarn home page:

www.skywarn.ampr.org

Classes can be found from March until the end of May this year.

Participation in the Metro Skywarn spotter program is a great way to contribute to our community, and it is lots of fun too. I hope that many of you who did not come to the class on the 15th will make it to one of the many other classes being offered this year.

73, Jeff, WØKF, TCRC Skywarn Liaison

Winter/Spring 2003
Volume 26, Number 1

Inside this issue

Remember!

The Next Quarterly Membership Meeting will be Happening on 03/25/02 at 7:00 PM

Please Join Us!

The Repeater is published quarterly by the Twin Cities Repeater Club, Inc. (TCRC). The TCRC is organized as a nonprofit corporation in the State of Minnesota, with Articles of Incorporation and Bylaws. The club elects officers annually. These officers are simultaneously elected for a two-year term on the Board of Directors. The Repeater Trustee is a permanent member of the Board of Directors. Unlike the other Officers and Board Members, the Trustee may select a proxy to serve in his place at meetings of the Board. Membership in the TCTC is $25 per year. The TCRC is an official ARRL affiliated society.

President's Report

by Shanon Haralson, KCØEIG

I want to take the time to thank all of the members and volunteers with the TCRC.

We have a great new web page that so many people have worked on for the last 5 months now.

The 6-meter repeater is all ready to go, and now that spring in right around the corner, we will have it up and on the air in no time. We did not accomplish the 6 meter repeater goals as fast as we would have liked to, mainly because of many new changes imposed by the City of Burnsville. But we also need to remember that we are a club of volunteers, and not everyone's schedule works out in a way that allows us to all get together and accomplish things.

I look forward to seeing all of you at the quarterly membership meeting on March 25th at Burnsville city hall. I would like to see as many of you show up as possible. We have a guest speaker on an emergency communications system in our state, who will discuss what we can do to help them.

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Welcome, New Members!

The Twin Cities Repeater Club would like to welcome the following fine folks who have joined our organization since September of 2002. Listen for them on the air, and give them a friendly TCRC Hello!

Callsign	Name	Residence
KCØOIO	Joseph Heitzinger	St.Paul
KCØOMO	Bruce Winter	Eagan
KCØORD	Steve Goblirsch	Minneapolis
WØRFK	Richard Kenney	Eagan
KCØNDI	Jim Anderson	Edina

~

Volunteers (Still) Needed!

TCRC is still seeking volunteers to help out with the ongoing needs of the organization. We are looking for a couple of folks to handle the Membership Committee Co-Chair responsibilities. This is an important duty, because if we don't maintain (or even increase) the size of our membership, the organization will have difficulty fulfilling its mission statement. The job is not terribly difficult, but some basic computer skills are very helpful, as the Membership Committee Chairs are expected to mail out notices of membership dues lapses, and welcoming information packets to prospective members and new members. Any expenses for printing and postage that might be incurred would be reimbursed from the club treasury, so your personal finances should not be an impediment to your signing up for these positions.

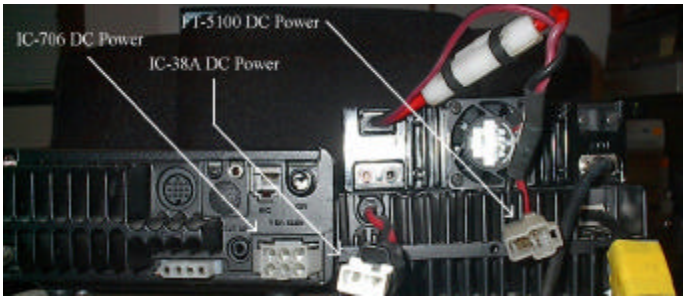
And as always, your Newsletter Editor is always on the lookout for articles or even ideas for articles for future newsletters. Although I do enjoy writing, I appreciate it when I get to actually do some editing (of articles written by other folks). Have something to share with your fellow TCRC members? Please send it in!

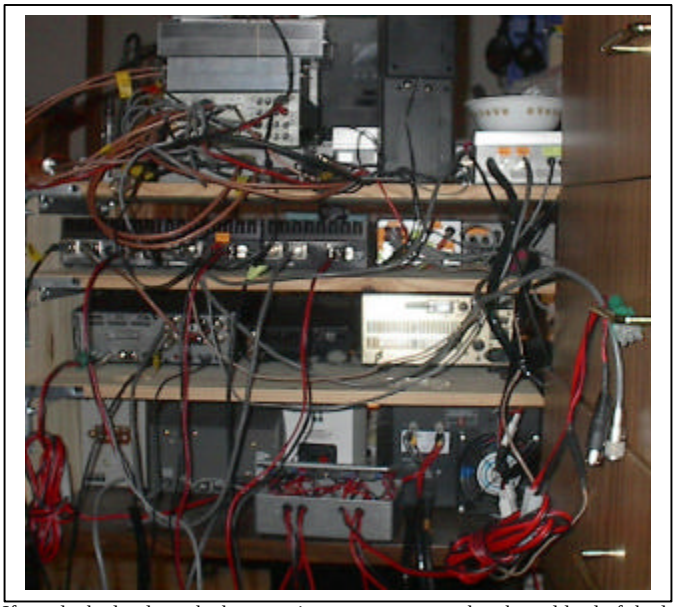
73 from your Newsletter Editor, WØJT

Power to the People (or to the Radios)

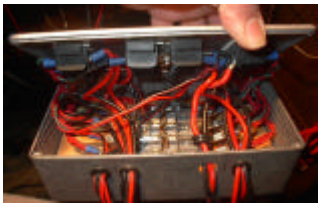
by John P. Toscano, WØJT

Those of you with only one or two radios may find it very easy to distribute DC power to your gear, but some of us learned the hard way that once you have two radios, they start having babies. And unfortunately, the more radios you accumulate, the greater the chances that you will start accumulating multiple, incompatible DC power connectors. Here, for example, is the back side of the radios that are commonly found in my vehicle. The Icom IC-706 MkII all-mode HF through 2 Meter radio uses a 6-pin Molex connector that is also used on my Yaesu FT-847 (seldom in the vehicle except if out in a VHF contest). The FT-5100 dual-band FM rig uses a T-shaped connector, and the Icom IC-38a rig for 220 FM uses a very obscure 2-pin connector that is unlike anything else I own. Of course, in my shack, things are even worse, what with all of these rigs, plus an Icom IC_251A 2 Meter all-mode radio used as a transverter IF radio, amplifiers for 2M, 135 cm, and 7-cm, a 222 MHz transverter, a 902 MHz transverter, a 1296 MHz transverter, preamp, and power amplifier, and a 2304 MHz transverter and power amplifier, not to mention various and sundry odds and ends like a CW keyer, powered SWR meters, etc. The picture below shows what that mess looks like.

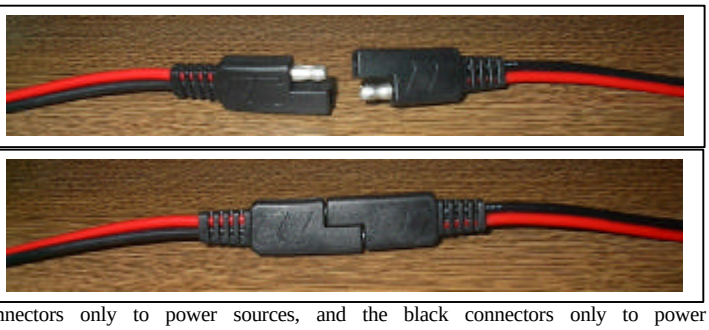




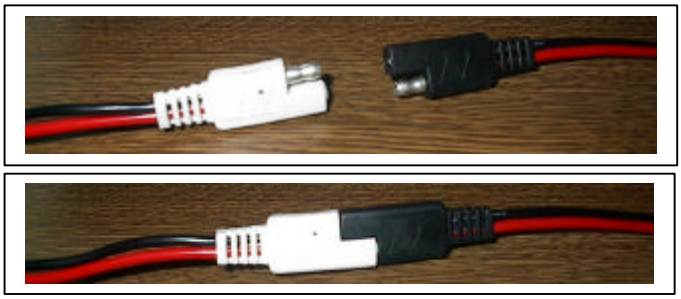
So how do I get power everywhere it needs to go? For starters, I built a power distribution box with 8 fused circuits, to which I have leads coming out for all of the various and sundry pieces of gear in the shack, all with their own unique connector cables. The picture below shows a bit closer view of the box, with its lid partially opened so that you can see the fuses inside. Also, if you look closely at the picture to the right (of the back side of my shack workstation), you may be able to spot the power distribution box at the bottom center of the picture.



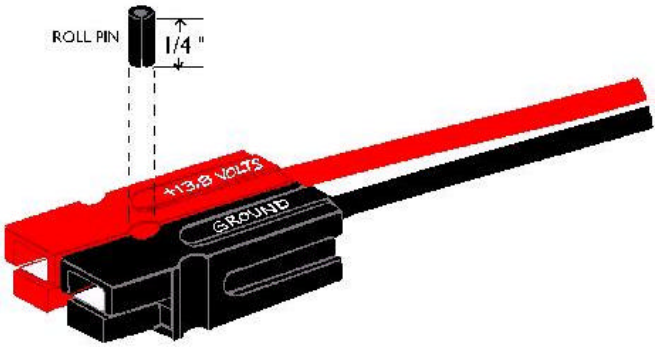
To bring some degree of order to this chaos, and allow for expandability and variation, many of the cables coming from the fused distribution box have two-pin inline connectors of a type commonly seen in many ham shacks. In most cases I have seen where hams are using these connectors, they have only one "gender" of connector, which can lead to disastrous results like the picture below, because of the lack of protection for connecting the +13.8 volt line directly to ground.



If you look closely at the bottom picture, you can see that the red lead of the left connector goes to the black lead of the right connector, and vice-versa. This will blow a fuse (if you are lucky), or do hundreds of dollars worth of damage to your radio equipment (if you are not so lucky). I have heard of cases of both. To protect myself somewhat from these disasters, I used connectors of this sort that were polarized to at least a small degree of protection. The key is that the white connectors are the "hot" connectors, with the red (+13.8 volt) lead recessed into the connector for protection from accidental shorting to exposed metal grounds, while the black connectors are the "cold" connectors, which go to the gear that needs power supplied to it. As long as I wire up the white connectors only to power sources, and the black connectors only to power "consumers", I am relatively safe from accidents of reverse-polarity or shorting DC power to ground. But there are still some problems with this arrangement. The power distribution box is a nightmare of wiring. Although I can build adapter cables for these two-pin connectors to radios that have DC power sockets for which I can obtain separate connectors, like the IC-706's 6-pin Molex connector, it may be difficult to convert "pigtail" leads like the ones on my FT-5100 and IC-38a, because I cannot find these 2-pin connectors without leads already attached. The distribution box I built is difficult to open to get at the fuses, and more than once I've broken one of those glass fuses while trying to pry it out of the box to replace it. (My 2 meter PA has a tendency to blow lots of fuses, every time I forget to turn down the output power on my 2 meter transmitter. The PA only wants 10 watts in for full output power. But I'm not complaining, it's much better to have blown all those fuses than blowing the input circuit of the amplifier! In any event, I kept looking for a better solution. My ideal connector would be one that was "genderless", so I wouldn't have to stock more than one type of them to cover all applications, yet it would be polarized in a way that made it impossible to connect things wrong. It would be available in a bare connector, rather than with a permanently attached wire, so I could fabricate any sort of cable I wanted to. It would have plenty of power handling capability, because my VHF amplifiers can easily draw 30 amps out of my Astron RS-70M. And most of all, it would be somehow easy to adequately fuse everything to protect from problems with excessive current drain, like overdriving an external power amplifier. The fuses would be easily accessible, easy to find in the store, and available in a variety of current sizes so that each device could be fused at a level that gave optimal protection without false blowing of fuses. Automotive blade-type fuses seemed ideal for the purpose, but have you ever found a socket for such a thing? And the idea of a sexless polarized connector seemed like a self- contradiction.



I feared my dream was for the impossible, but the Anderson Power Company invented just what I needed in a connector, called the Anderson Power Pole, and the West Mountain Radio Company took that connector and answered the rest of my needs with a packaged power distribution box called the RIGrunner. The Power Pole connector is a single-conductor connector, but the plastic housings (which come in a variety of colors) are designed to interlock with one another to form multi-conductor connectors. Although the most common configuration would be one red and one black connector for DC power and ground, I have re-designed my transverter band selector box to use cables using four stacked Power Poles to provide DC Power, Ground, PTT In, and PTT Out to each transverter interface box, and these re-designed boxes use three stacked Power Poles to provide DC Power, Ground, and PTT to a transverter, the associated preamp (if any), and the associated power amplifier (if any) for each microwave band.



An Anderson Power Pole pair, showing the insertion of the Roll Pin to lock the pair of housings in place.

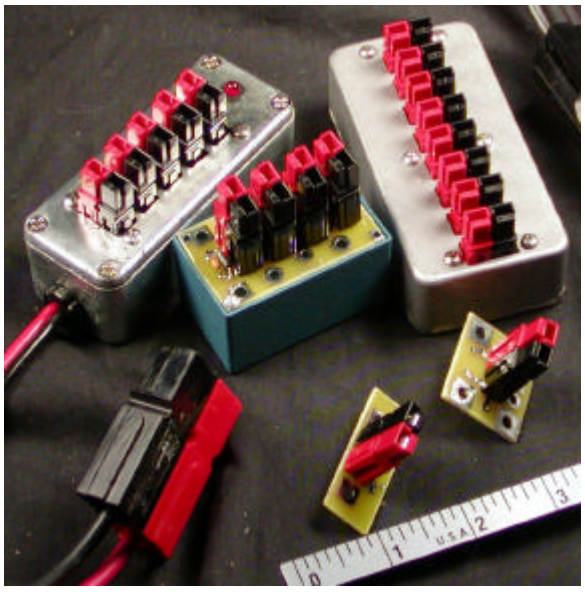
The RIGrunner is a power distribution box that uses one pair of Power Poles to accept power in from your power supply, and uses 5, 8, or 12 pairs of Power Poles to distribute that power to your devices. Each RIGrunner has a 40 amp automotive blade fuse on the input circuit, and individual automotive blade fuses of various sizes for each of the output circuits. The fuses provided cover 1, 5, 10, and 25 amps, but you are free to move the fuses around or buy any sizes you want (up to the rated current of 45 amps for the Power Pole) for any of the positions, so you can customize your box to the needs of your own gear. And the 8 and 12-output versions also have a voltage sensing circuit that will warn you if your DC power is too high or too low, by lighting an LED and/or sounding an audible alert.

The three models of RIGrunner. Models 4008 and 4012 have undervoltage/overvoltage warning circuitry in addition to the fused Power Pole DC connectors.

The Anderson Power Poles come in three different current capacity ratings, that can be interconnected with one another: 15, 30, and 45 amperes. (There are many other sizes also, but they typically connect only with connectors of the identical power rating.) These three sizes use the same plastic shells, and the difference is in the metal pins that go inside the shell – they fit different diameters or gauges of wire. The RIGrunners all use the 45 amp connectors at each position, but if you have some low-power devices in your shack that require +13.8vdc, you may want to use the 15-amp connector with thinner gauge wire for maximum flexibility, and 45 amp connectors only on the most power-hungry components like PA's. Most Ham gear is perfectly happy with a 30-amp connector.

A 2-way splitter (left), and a 5-way splitter (right), as sold by PowerWerx or as you might fabricate for yourself.

Depending on just how many components you have to supply power to, even a 12-position RIGrunner may not be "enough". You can expand the number of available connectors by running a "jumper cable" from one RIGrunner to a second one, or you can make (or buy) cables that provide multiple Power Pole connectors from a single connection, as seen in the pictures above (to the right of the RIGrunner picture). You can even find plans on the Internet from Paul Wade, W1GHZ, for building your own power connector boxes with Anderson Power Poles, as shown in the photo to the right. I recommend the following web sites to get more information about these unique connectors and to stimulate your thoughts on how they may solve your connector problems.



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http://www.andersonpower.com
http://www.westmountainradio.com/
http://www.powerwerx.com
http://www.w1ghz.cx/small_proj/small_proj.htm
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73 de WØJT

QRP at the 2002 TCRC Field Day

by Jim Rice (NØOA)

Field Day 2002 was my second field day with the Twin Cities Repeater Club (TCRC). I had such a great experience last year, that I was really looking forward to this year's activities. I really have to thank Bob (ABØCI) for recruiting my camper last year, or I might not have had the excuse to get involved. Now, I'm hooked on Field Day with the TCRC.

Getting charged up and ready to go.

As Field Day 2002 rapidly approached, and as I was preparing to jump in and play, I decided to set some personal goals for operation this year. Two of those goals were to make some QRP contacts and operate some PSK31. QRP and PSK are two aspects of the hobby (in addition to getting my CW speed back up to where I want it) that I have had some focus on in the last year, and I wanted to try my hand at both on Field Day this year. In the interest of efficiency, I decided to combine these two goals into one, and see if I could make some PSK QRP contacts. Since PSK is such a QRP friendly mode of operation, I thought this would be a cinch.

I was the station manager for Station Three this year (one of the TCRC HF stations). So, where I would operate wasn't really an issue. For a rig, I decided to use my Yaesu FT817 radio with the Nomic Rigblaster interface. In addition to the FT817, I used my Z11 QRP tuner to get a good match to the trap dipole we used to the lower bands at station three. The dipole was tuned pretty well for 20m SSB. But, the antenna needed a little tuning for 14.070.

The layout of Station Three, next to the FØOD station

The FT817 is a great little QRP rig. In additional to being an all mode radio, it has an internal battery that can be charged with an internal charging circuit from any 12V source. I charged the FT817 using a set of small IPC solar panels. The IPC doesn't provide enough current for operation. But, it does a fine job charging the internal battery of the FT817.

The FT817 was set up in the camper for Station Three so that I could easily "steal" the antenna from the QRO radio when I had a chance to try out PSK. So, as Saturday started to fall into a regular rhythm, I decided to try and give QRP and PSK a try. The setup was a cinch – something I had done several times before. However, actually making a QRP contact on Field Day turned out to be much more difficult than I expected.

When I fired up Digipan, I immediately saw that the band was almost saturated with traffic. This is normally a good thing when you are out to make a contact. However, today it seemed that the operators on the band were only interested in making contacts with the high power stations and so I spent nearly one half an hour just getting three contacts on 20m PSK.

So, a little disappointed in Field Day PSK, I thought I'd tune up the band and see if I had a little better luck using the FT817 with the 10m/15m beam that Station Three had for QRO operation. I also decided to try jump over to SSB. The move to SSB made it easier to log since I only had the one laptop. This definitely proved that a better antenna makes all the difference. Within a few minutes, I was able to make three or four contacts on 10m. I stayed QRP long enough to satisfy the minimum time on the band and then moved back to QRO. QRO not only made it easier to make the contacts. It also made it easier to log since the Kenwood TS2000 I was using for QRO was interfaced to the logging software.

In summary, my QRP and PSK attempts were successful, in that I was able to make it work. However, for a 3A station like the TCRC, making a lot of QRP contacts is probably more trouble than it is worth. The hustle and bustle of field day lends itself to racking up QRO points. But, the number of strong signals on the bands and the relatively less experienced operators make it more difficult for stations running QRP to make themselves heard. However, it was very satisfying to know that I was able to make it work at all in the Field Day 2002 setting.

Operating at Station Three. Notice the FT817 on the Kenwood.

Twin Cities Repeater Club, Inc.
P.O. Box 11534
St. Paul, MN 55111-0534

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http://www.tcrc.org

Fill out this Membership Application Form, and mail it with your check for $25.00 payable to the Twin Cities Repeater Club, to the mailing address listed above. You can also fill out this form electronically at the web address listed above, and either send us a check, or pay online using the PayPal system.

Name_____ Callsign _____ License Class _____

Address _____ City _____ State _____ Zip _____

Home Phone _____ Work Phone_____ Computer Phone_____

Ok to list your address in club publications? ___No ___Yes
Ok to list your phone in club publications? ___No ___Yes
Are you available for Emergency Service? ___No ___Yes
Are you a member of the ARRL? ___No ___Yes
Are you a member of Metro Skywarn? ___No ___Yes, spotter ID:_____

Are you a member of ARES? ___No ___Yes
Would you like an autodial speed dial number? ___No ___Yes, to phone #_____
Would you like a club ID badge? ___No ___Yes (free to new members, otherwise $5.00)
What is your internet e-mail adress, if any? ___None
Would you like an e-mail alias set up, so that mail sent to ***yourcallsign*@tcrc.org gets** redirected to the e-mail address you listed above? This can be handy on the air! ___No ___Yes
Do you want a copy of the TCRC Handbook? ___No ___Yes (add $9.50, which includes postage)
Do you want a TCRC binder to hold it? ___No ___Yes (Add $5.50 to the above)
This is ___New Application ___Renewal ___Other Change __Callsign update, old call was _____