

# 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.

## PRESIDENT'S LETTER

CQ, CQ de WBØJMG

Hi everyone. Here are a few thoughts for the summer. Our summers here near the 45<sup>th</sup> parallel are brief and verdant. We had a lot of late spring snow storms and the like. Now everyone wants to get out and enjoy the Minnesota summer. Picnics, thunderstorms, bicycles, sunshine, (soda)pop, lawn mowing, overworked muscles, sports, art fairs, patios, and ham radio... ham radio? Yes, I find many times that having a handheld with me during some of these activities adds another dimension of fun. Set up that QRP HF radio on one end of the picnic table and tell the world how you are enjoying the Minnesota summers. If you are a VHF enthusiast, you can't beat the early morning when some temperature inversions cause VHF signals to travel long distances. Suddenly, you hear and magically work distant stations. An old friend of mine used to drive to, and climb an old fire watchtower and operate hundreds of miles with a handheld on 2 meter FM in the AM! I sometimes set up a radio on my back deck and operate a "Mini-Field-Day" on a warm summer afternoon. Easy to do...

So bring a radio along for the summer fun. Get outside and make some waves.

73, de Artie WBØJMG  
President, Twin Cities Repeater Club, Inc.

**Summer 2013**  
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**Join Us For**  
**Field Day 2013**

**Terrace Oaks**  
**West Park,**  
**Saturday 6/22**  
**1PM until**  
**Sunday 6/23 at**  
**1PM. Located**  
**on CR11, just**  
**south of Bnsvl**  
**Parkway.**  
**44°46'16.5" N**  
**93°14'50.5" W**

The Repeater is published quarterly by the Twin Cities Repeater Club, Inc. (the 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 TCRC is \$25 per year. The TCRC is an official ARRL affiliated society.

#### **TCRC Officers:**

**President:** Artie Johnson, WBØJMG  
**Vice President:** Dave Ventura, KEØNA  
**Secretary:** Tanna Morse, KCØURO  
**Treasurer:** Craig Larsen, KCØDMF

#### **Board Members:**

All of the above Officers, plus...  
Chris Buck, WØHO, **Club Trustee**  
**Past Vice President:** Phil LeFever, KBØNES  
**Appointed:** Ken Lewis, K3FMK  
**Appointed:** Jeff Goodnuff, WØKF  
**Appointed:** Rod Freeborg, KC9HT

#### **Technical Committee (a/k/a Tech Team):**

Kevin Uhlir, NØBEL, **Chair**  
Phil LeFever, KBØNES, **Vice Chair**  
Doug LaBore, NØBIS  
Rich Kenney, WØRFK  
John Toscano, WØJT  
Jeff Goodnuff, WØKF  
Art Johnson, WBØJMG

#### **Field Day Committee:**

Tanna Morse, KCØURO, **Chair**  
*Open*, **Vice-Chair**  
Kevin Uhlir, NØBEL, **Site Setup Manager**  
*Open*, **FOOD Station Manager**

#### **Information Services Committee:**

Kevin Uhlir, NØBEL, **Chair and Head Webmaster**  
Phil LeFever, KBØNES, **Assistant Webmaster**  
John Toscano, WØJT, **Assistant Webmaster**  
Jeff Goodnuff, WØKF, **Web Calendar Maintainer**

#### **Membership Committee:**

Craig Larsen, KCØDMF, **Chair**  
Tanna Morse, KCØURO, *member*  
Dave Ventura, KEØNA, *member*

#### **Newsletter Committee:**

John Toscano, WØJT, **Editor**

#### **Net Control Operators:**

**Chair:** Larry Jenkins, KØLEJ  
1<sup>st</sup> Tuesday: Jeff Goodnuff, WØKF  
2<sup>nd</sup> Tuesday: Mark Newman, KCØITP  
3<sup>rd</sup> Tuesday: Artie Johnson, WBØJMG  
4<sup>th</sup> Tuesday: Phil LeFever, KBØNES  
5<sup>th</sup> Tuesday: John Toscano, WØJT

#### **Metro Skywarn Liaison:**

Jeff Goodnuff, WØKF

#### **Minnesota Repeater Council Liaison:**

Chris Buck, WØHO

#### **Emergency Services Coordinator:**

Janet Skovran, KBØZFB

#### **TCRC Club Trustee:**

Chris Buck, WØHO

# Thoughts of Our Membership Chair

I have a confession to make.  
I love this hobby!

I believe this is a great hobby because of how we can affect change in the community or in the lives of others. And how we do this is by getting involved.

Our hobby encourages involvement. We can volunteer our talents to help teach a ham radio class. We can volunteer our time by working with the Boy Scouts or local high schools to educate the youth about amateur radio. We can volunteer our skills for public safety by being an operator for a local event like the Minneapolis Aquatennial or the MS (multiple sclerosis) Society's bike rides. For groups like this the adage holds true: many hands make light work.

We have some opportunities here at the TCRC as well. Are you passionate about some aspect of amateur radio? You could write an article for our newsletter.

Are you good with social events? You could help our social committee come up with new activities for the club, something that will bring people together. Don't worry, you can help as much or as little as you wish.

The old adage is indeed true: many hands make light work.

So, if you have ideas for the club or want to get involved, send an email to [membership@tcrc.org](mailto:membership@tcrc.org) (or send us a letter to our PO Box, 11534, Saint Paul, Minnesota, 55111-0534).

We invite you to get involved and make this club the best club ever.

73, Craig Larsen, KCØDMF



## Skywarn Classes

As is our custom, the TCRC sponsored two Skywarn classes this year. We trained 52 Skywarn spotters. These

additional spotters will increase the safety and effectiveness of the Skywarn system. We wish to express our gratitude to Open Circle Church for providing the venue used to conduct these classes. We hope to be able to have classes again next year.



## F.D.I.M. --- What's That?

By Walt Richie, KDØXT

“Four Days in May.” But aren't there 31 days in May? For Hams, at least those interested in QRP, there is a fourth important day in May – the Thursday before Hamvention. That is the day when the QRP Amateur Radio Club International (QRP ARCI) has its annual conference in Dayton, Ohio.

This year's conference included 6 seminars;

**“Techniques for Kit Building Success”** by Joe Eisenberg, KØNEB

**“Next Generation Direct Conversion Receive and Transmit Modules for the LF-MF-HF-VHF Bands”** by (Dr.) Rick Campbell, KK7B

**“Putting the ‘L’ Back in Solder”** by George Dobbs. G3RJV

**“Salt Water, Medium Waves and QRP”** by Colin Turner, G3VTT

**“Baluns: What They Do and How They Do It”** by Roy Lewallen, W7EL

**“The Softer Side of OpenHPSDR”** by Jeremy McDermond, NH6Z

After brief opening remarks by Ken Evans, W4DU, President of QRP ARCI,

Joe, KØNEB, started off with **“Techniques for Kit Building Success.”**

He started with “Why We Build Kits.” In a word – Fun! Also because we want something that might not be commercially available. It can also improve our skills and save money!

Before starting assembly we should be sure to have the needed tools and test equipment. We may need such things as: most likely a multimeter, perhaps an oscilloscope, a reference receiver, a headset or speaker, a key or paddle, dummy load, antenna, power supply, tuning tools. We will need a work surface and probably electrostatic protection for sensitive components. We will also need printed instructions and/or a computer.

Joe also gave hints for sorting parts into bins, using a cupcake tray (metal works well for ESD sensitive components) or tackle box. Be sure to have the capability of covering them, and the partial assembly, from inquisitive paws and hands when not in use.

Kit building should proceed in a stage-by-stage manner, thoroughly testing each stage when completed. Start with the power supply. Again, be sure to test each stage when completed – it's much simpler to find and fix a problem at this point than when assembly is completed!

The next seminar **“Next Generation Direct Conversion Receive and Transmit Modules for the LF-MF-HF-VHF Bands”** was by Rick, KK7B, who is a professor at Portland State University. He described a modular approach to building a receiver where each module

has a common interface and is easily replaceable with another giving great versatility in building a radio for a specific purpose. The focus is on making each module independent, fully tested and with a standard analog I/O interface.

For example, a design to provide the volume control at as early a stage as possible and also provide high selectivity was shown. It consists of a parallel tuned circuit with a 1-turn coil connecting to the antenna and coupling coil to the remainder of the receiver that rotates from coaxial to the main coil to 90 degrees providing volume control.

He showed a photo of one of his configurations with the above pre-selector and die-cast boxes containing various other modules (mixers, amplifiers, etc.). More detail is available on his web page at [www.cecs.pdx.edu/~campbell/](http://www.cecs.pdx.edu/~campbell/)

The next presenter was George, G3RJV, "**Putting the 'L' Back in Solder**". He is the editor of the quarterly magazine of the QRP Club, "SPRAT" and also writes a monthly column for the "UK Practical Wireless" magazine. After subduing his reluctance to flying, it was great to have him chide us a bit for the American pronunciation of "solder" {sod-er} and then proceed to enlighten us with some useful hints. One hint was to use an Ikea tea tray for each project. Another was how to use a carbon-track potentiometer as a variable low value capacitor.

Rev. Dobbs also reviewed examples of using meSquares ([www.QRPme.com](http://www.QRPme.com))

and Blue Tack to build Manhattan style projects. He also went on to describe an interesting single FET 80 meter CW transceiver built by G3XBM.

After lunch, Colin, G3VTT, talked about "**Salt Water, Medium Waves and QRP.**" He shared with us some of his adventures operating on a radio ship off the Dutch coast with a K1. He had some fascinating stories about both pirate and legal operation. Perhaps you've heard of some of the ships and stations that Colin worked from: "Radio Caroline", M.V. "Ross Revenge", "Radio Waddenzee 1602 AM."

Imagine being anchored in the North Channel during a gale, with no engine. Makes for a long night!!

Next, Roy, W7EL, talked about "**Baluns: What They Do and How They Do It.**" What problems do baluns solve? He talked about how a balun is the same as a common mode choke and about the difference between a voltage balun and a current balun; how a voltage balun can be converted to a current balun by cutting the third winding out of the circuit.

More information is available at <http://www.eznec.com/Amateur/Articles/Baluns.pdf>

Finally, Jeremy, NH6Z, gave a presentation on "**The Softer Side of OpenHPSDR.**" During his presentation he had a very interesting animated graphic depicting time domain vs frequency domain despite the "scary" term "Fourier transform." It looks like a fascinating future for radio is here now!

Jeremy talked about the OpenHPSDR project. In recent years software defined radio (SDR) has become of increasing interest. Many newer rigs are using at least some of this technology. Some are all SDR! But there are still opportunities for amateurs to experiment with and build their own SDR's and push the state of the art. Their website is [www.openhpsdr.org](http://www.openhpsdr.org) – you'll find volumes of information here!

The ebook “Scientist and Engineer’s Guide to Digital Signal Processing” is available for free download from [www.dspguide.com](http://www.dspguide.com) for those interested in details.

Besides these seminars there were evening events including a Buildathon, QRP Club Night, Vendor Evening and a Ten-Tec Presentation. Add all of this to Hamvention and you have a very full week – in just four days in May!!

On Saturday evening FDIM culminated with the Grand Banquet. Besides the excellent food and meeting with other hams, there were six door prizes given away followed by a raffle. The door prizes included a Begali paddle, an AlexLoop antenna, several Tuna Tin kits, some ND-1 Network DSP modules and some professional (big!) project boxes. The top prize was a raffle for an Elecraft KX3. Sadly, we can't bring any of these prizes to Show-n-Tell!

## Welcome Our Newest Member

ADØSB Mr. Shawn Burckhard

## Field Day 2013



Please come join us at Terrace Oaks Park West in Burnsville the weekend of June 22 & 23, 2013. The park is located just south of Burnsville Parkway on CR11. The GPS coordinates are: 44° 46' 16.5" North, 93° 14' 58.5" West

We will be there to set up at 8:00AM Saturday. On the air operations start at 1:00PM Saturday and continue for 24 hours.

We plan on operating three stations, HF CW, HF SSB, and VHF-UHF (including satellite). Everyone is welcome and will be able to operate regardless of your license class.

A membership meeting is scheduled for approximately 7:00PM on Saturday. Refreshments, hotdogs and hamburgers will be available.

Please be advised that due to the very wet spring, there will be an overabundance of the Minnesota State Bird (mosquito), so bring bug spray.



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

**Place  
Stamp  
Here -**

Your Membership Dues Have Expired.  
 Please Renew your Membership Today!

## Join the Twin Cities Repeater Club!

**P.O. Box 11534, St. Paul, MN 55111-0534**

<http://www.tcrc.org>

There are two ways to register:

- 1) Return this completed application form (to the mailing address indicated above) along with your \$25 check payable to: **Twin Cities Repeater Club**

**OR**

- 2) You can fill out this form electronically (at the web address indicated above) and pay online using PayPal.

(Please check one) This is  New Application  Renewal  Change Date \_\_\_\_\_

Name \_\_\_\_\_ Callsign \_\_\_\_\_

Address \_\_\_\_\_ License Class \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Home Phone \_\_\_\_\_ Work Phone \_\_\_\_\_ Cell Phone \_\_\_\_\_

E-mail Address \_\_\_\_\_

Please note: For your privacy, an e-mail alias will be set up using ***yourcallsign@tcrc.org***. E-mails sent to this alias will be redirected to the e-mail address you indicated above.

May we list your address in club publications?  Yes  No

May we list your phone in club publications?  Yes  No

Are you available for Emergency Service?  Yes  No

Are you a member of the ARRL?  Yes  No

Are you a member of Metro Skywarn?  Yes  No; (if Yes) spotter ID: \_\_\_\_\_

Are you a member of ARES?  Yes  No

Would you like a club ID badge?  Yes  No (free to new members, otherwise \$5.00)